

MINISTRY OF REGIONAL DEVELOPMENT, CONSTRUCTION, HOUSING AND COMMUNAL SERVICES OF UKRAINE
KIEV CITY STATE ADMINISTRATION
PUBLIC JOINT STOCK COMPANY “Kyivvodokanal” (KVK)

**EXPERTS
FOR
FORMULATING RECONSTRUCTION PLAN
OF
BORTNICHESKAYA
WASTEWATER TREATMENT PLANT
IN
UKRAINE

FINAL REPORT

DRAWINGS**

MARCH 2014

JAPAN INTERNATIONAL COOPERATION AGENCY

**TEC INTERNATIONAL CO., LTD.
NIHON SUIKO SEKKEI CO., LTD.**

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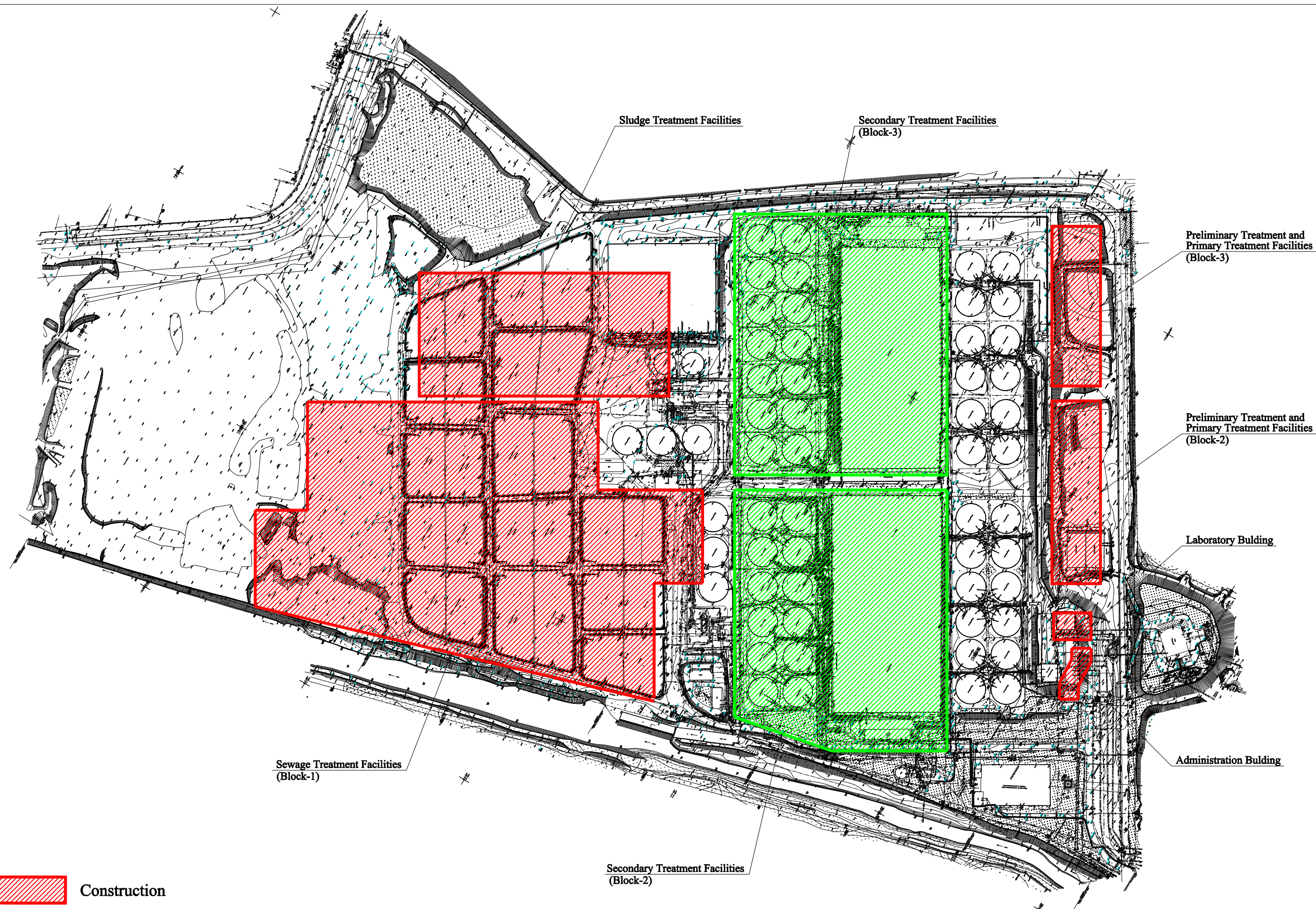
DRAWINGS

MARCH 2014

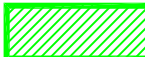
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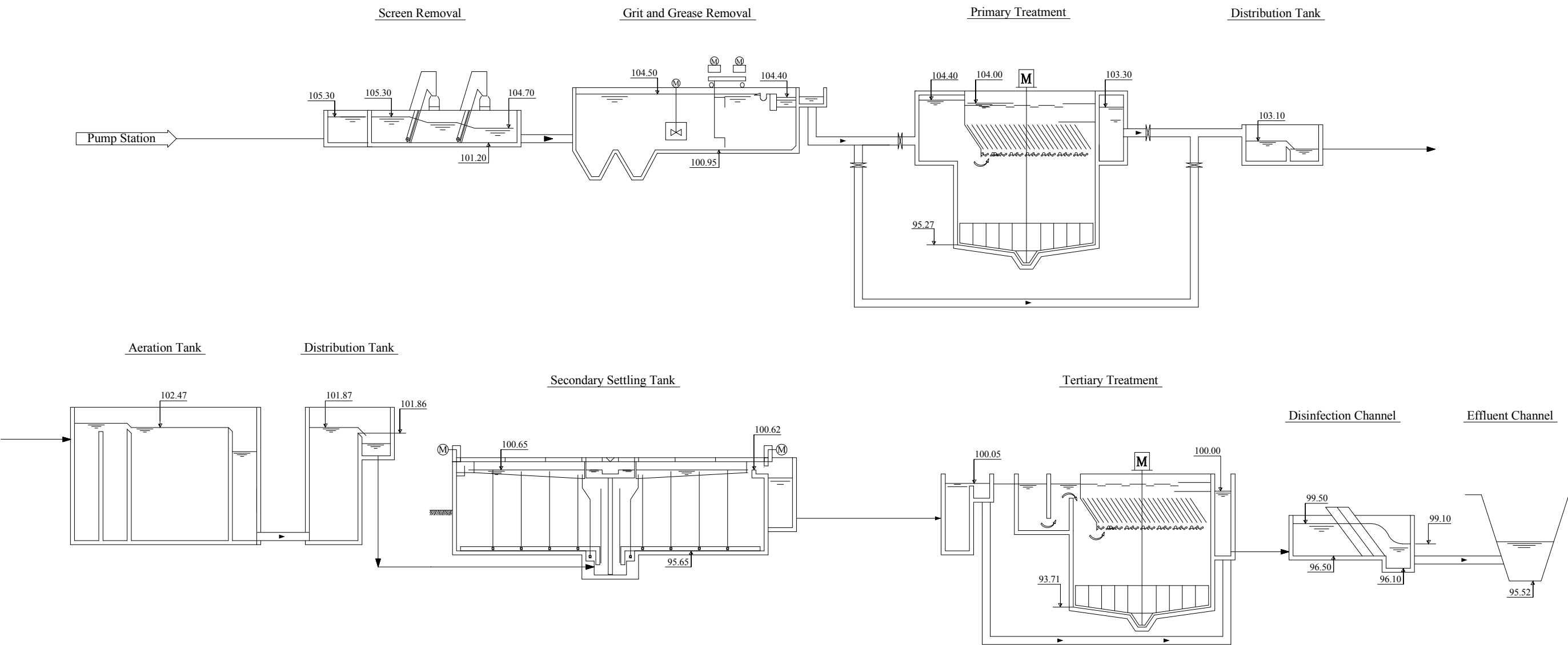
DRW.NO	TITLE	DRW.NO	TITLE
General Plan		WWTP-35	Primary Treatment Facilities (Block-3)
WWTP-01	General Layout of Bortnychy Aeration Station	WWTP-36	Aeration Tank (Block-3)
		WWTP-37	Blower Building (Block-3)
Sewage Treatment Facilities (Block-1)		WWTP-38	Secaondary Settling Tank (Block-3)
WWTP-02	Hydraulic Profile (Block-1)		
WWTP-03	Sewage Treatment Process (Block-1)	Sludge Treatment Facilities	
WWTP-04	Preliminary Treatment Facilities (Block-1)	WWTP-39	Sludge Treatment Process
WWTP-05	Preliminary Treatment Facilities (Block-1)	WWTP-40	Sludge Incineration Process
WWTP-06	Preliminary Treatment Facilities (Block-1)	WWTP-41	General Layout of Sludge Treatment Facilities
WWTP-07	Preliminary Treatment Facilities (Block-1)	WWTP-42	Gravity Thickener
WWTP-08	Primary Treatment Facilities (Block-1)	WWTP-43	Mechanical Thickening and Dewatering Building
WWTP-09	Primary Treatment Facilities (Block-1)	WWTP-44	Mechanical Thickening and Dewatering Building
WWTP-10	Aeration Tank (Block-1)	WWTP-45	Mechanical Thickening and Dewatering Building
WWTP-11	Aeration Tank (Block-1)	WWTP-46	Mechanical Thickening and Dewatering Building
WWTP-12	Blower Building (Block-1)	WWTP-47	Mechanical Thickening and Dewatering Building
WWTP-13	Secaondary Settling Tank (Block-1)	WWTP-48	Mechanical Thickening and Dewatering Building
WWTP-14	Tertiary Treatment Facilities (Block-1)	WWTP-49	Sludge Incineration Facilities
WWTP-15	Tertiary Treatment Facilities (Block-1)	WWTP-50	Steam Turbine Building
WWTP-16	Disinfection Facilities (Block-1)	WWTP-51	Steam Turbine Building
Sewage Treatment Facilities (Block-2)		Electrical Facilities	
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WWTP-25	Aeration Tank (Block-2)	WWTP-58	Administration Building
WWTP-26	Aeration Tank (Block-2)	WWTP-59	Laboratory Building
WWTP-27	Blower Building (Block-2)	WWTP-60	Laboratory Building
WWTP-28	Secaondary Settling Tank (Block-2)		
Sewage Treatment Facilities (Block-3)			
WWTP-29	Preliminary Treatment and Primary Treatment Process (Block-3)		
WWTP-30	Preliminary Treatment Facilities (Block-3)		
WWTP-31	Preliminary Treatment Facilities (Block-3)		
WWTP-32	Preliminary Treatment Facilities (Block-3)		
WWTP-33	Preliminary Treatment Facilities (Block-3)		
WWTP-34	Primary Treatment Facilities (Block-3)		



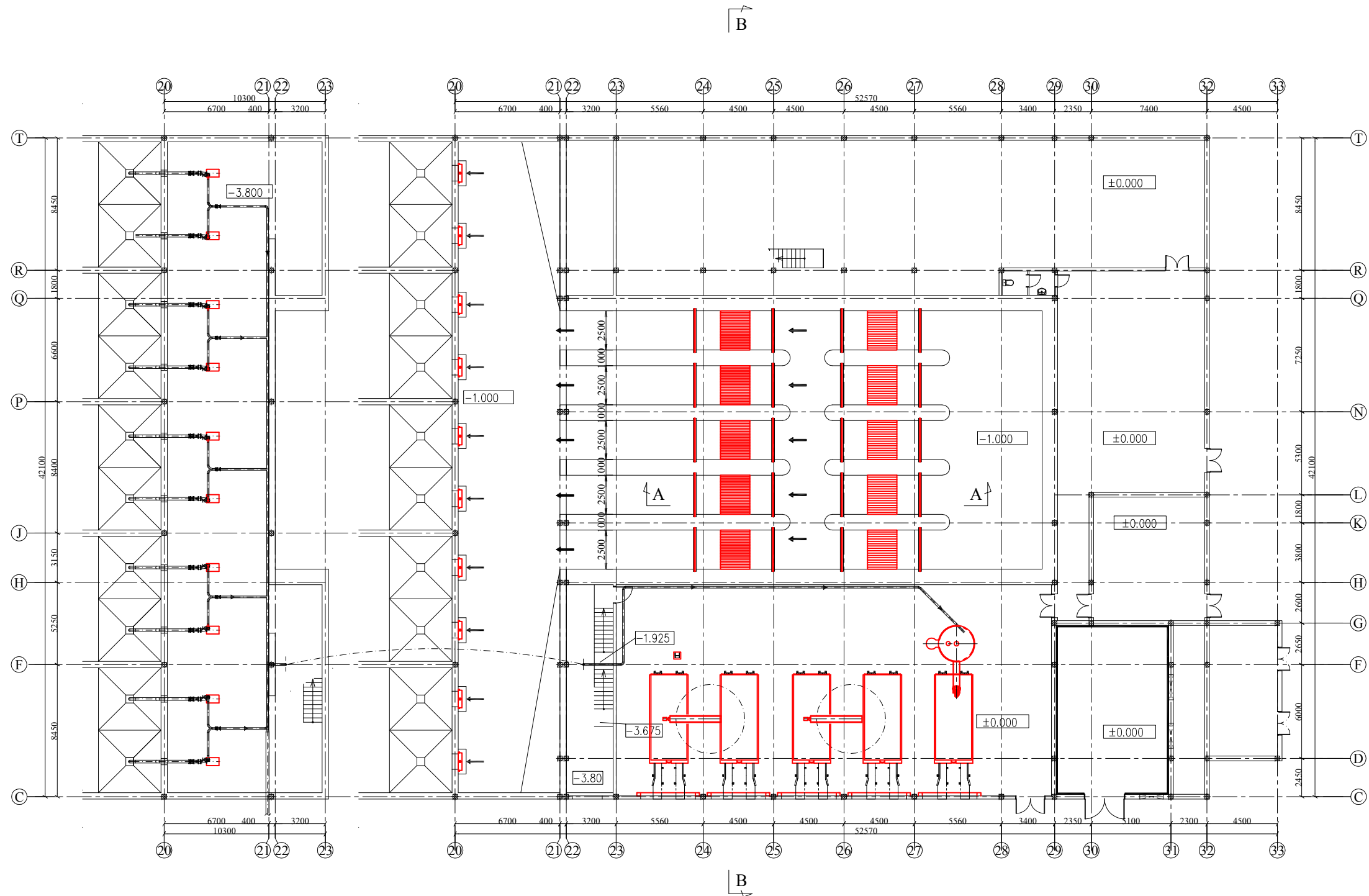
 Construction

 Renovation

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-01
Title: General Layout of Bortnychy Aeration Station	Scale: 1:1500



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-02
Title: Hydraulic Profile (Block-1)	Scale: NONE



-3.800 FLOOR PLAN SC 1:300

±0.000 FLOOR PLAN SC 1:300

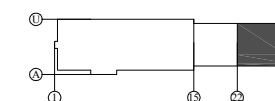
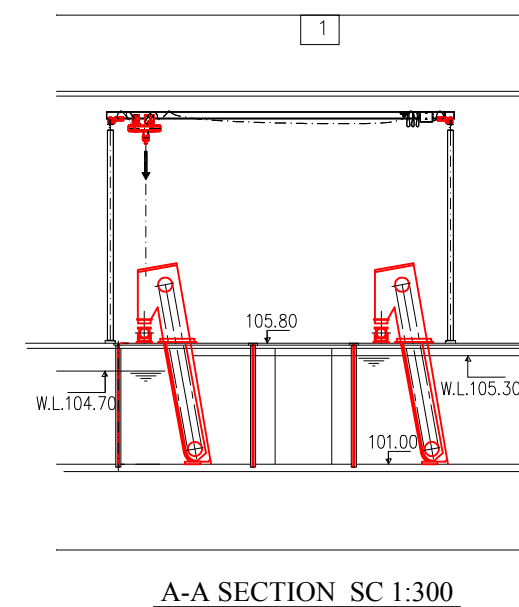
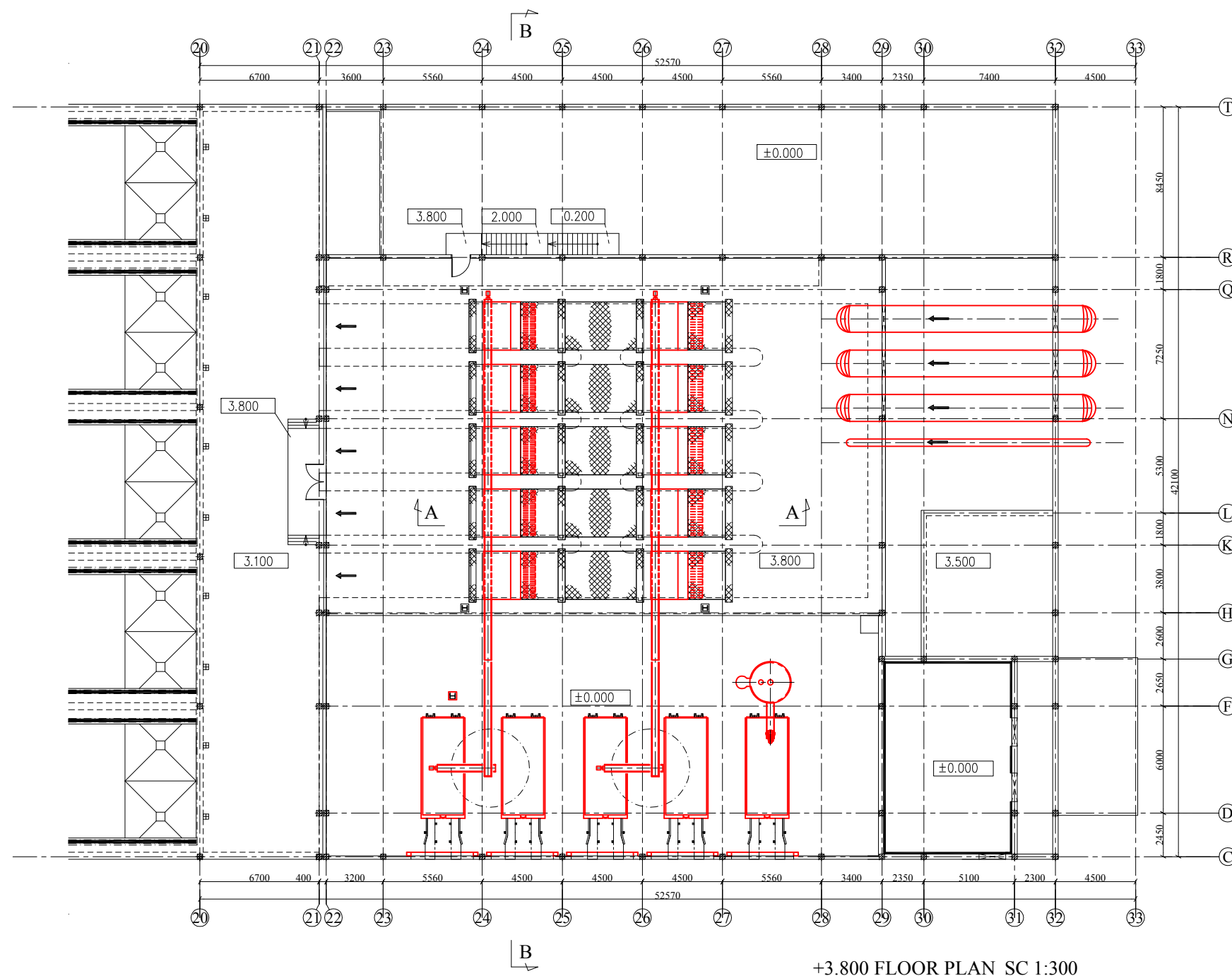
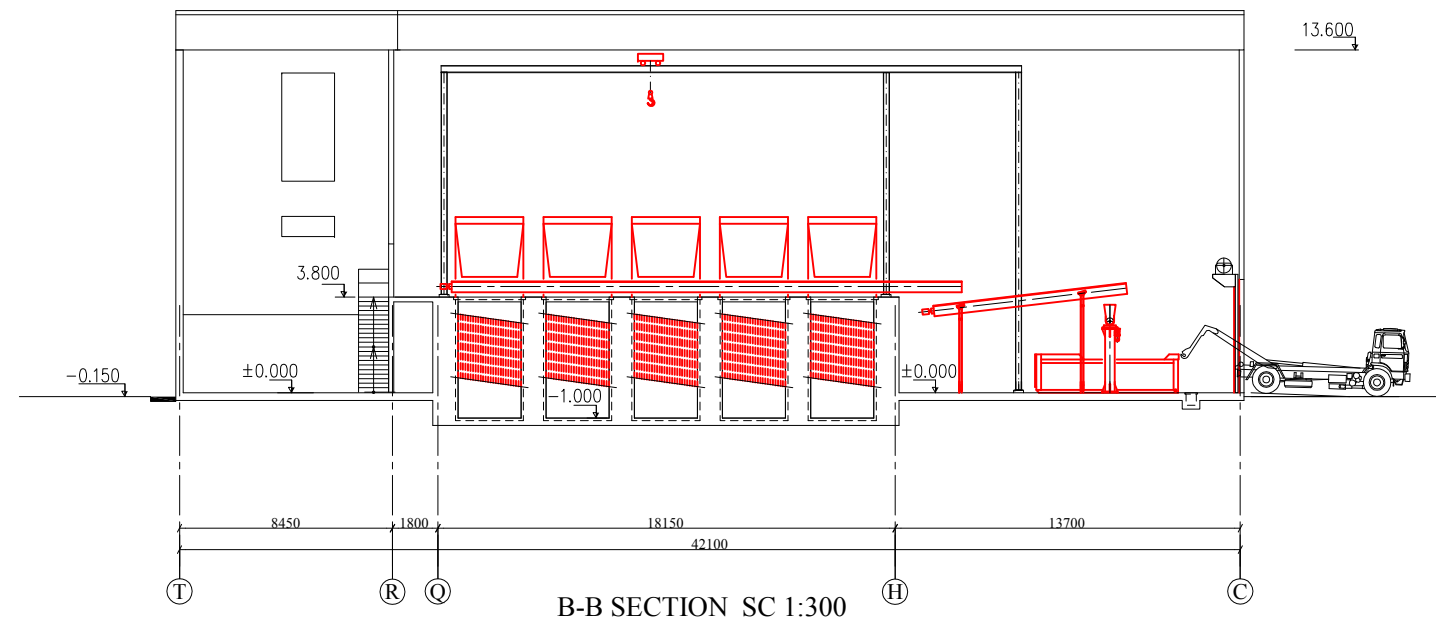
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

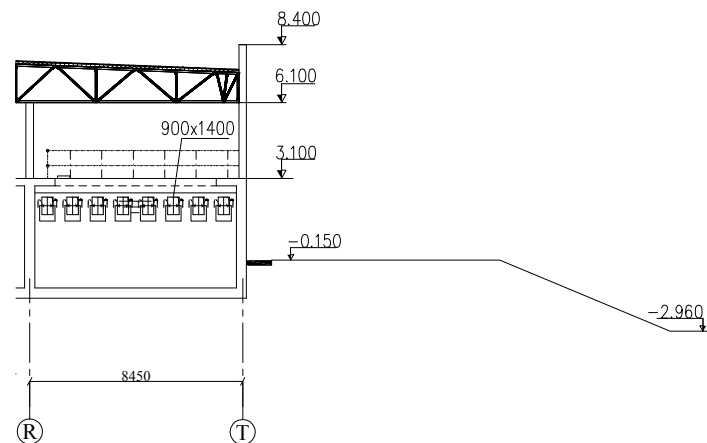
Drw no:
WWTP-04

Title: Preliminary Treatment Facilities (Block-1)

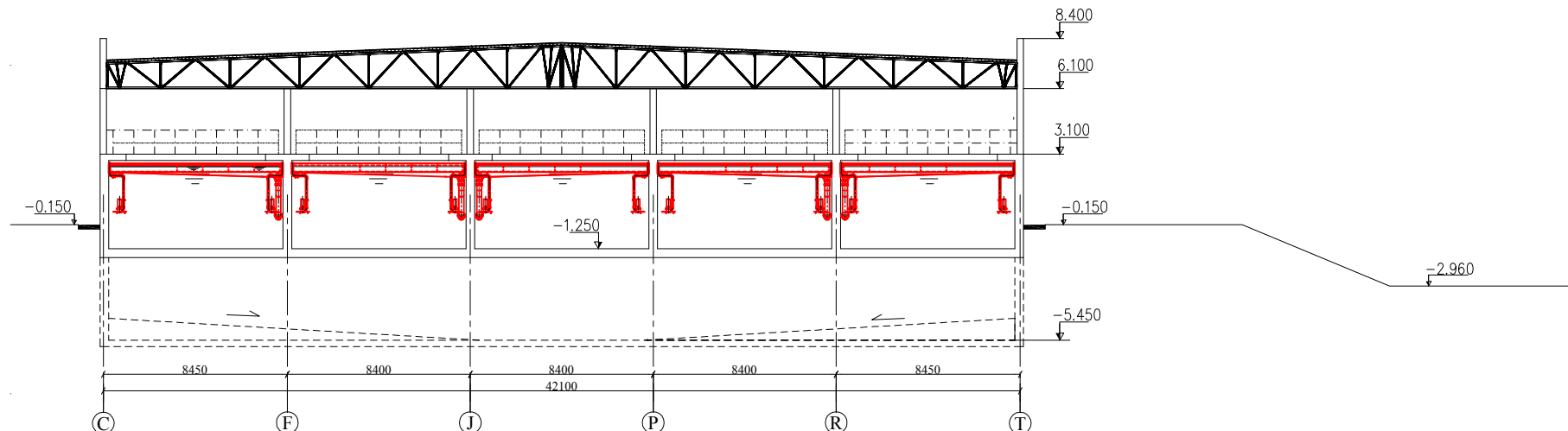
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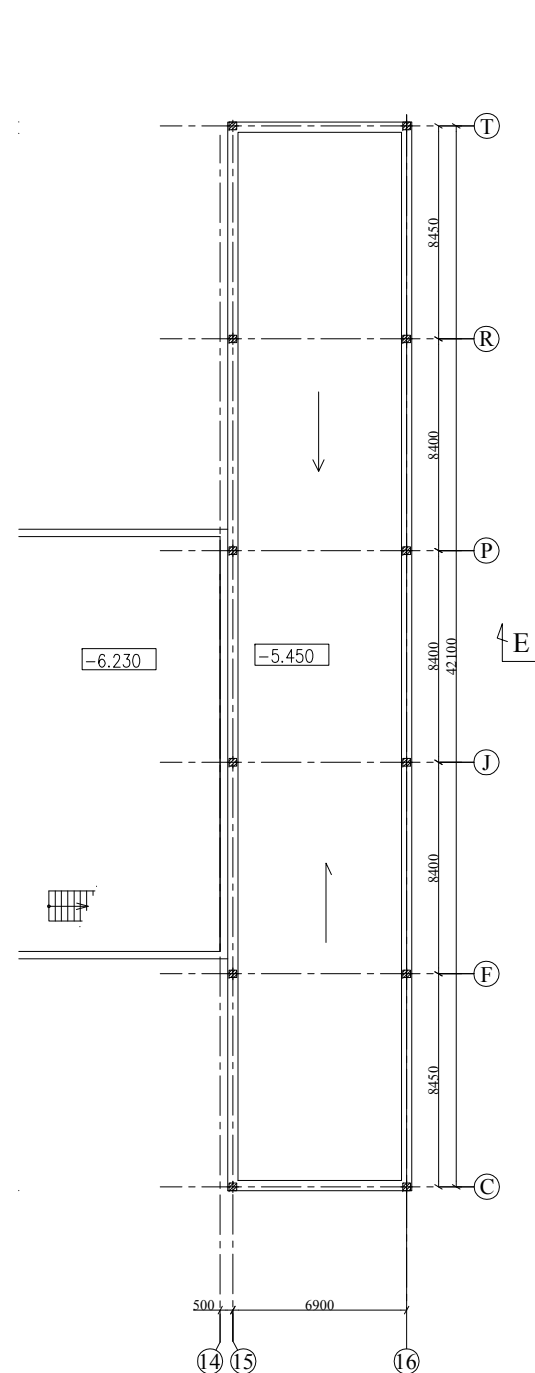
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-05
Title: Preliminary Treatment Facilities (Block-1)	Scale: 1:300



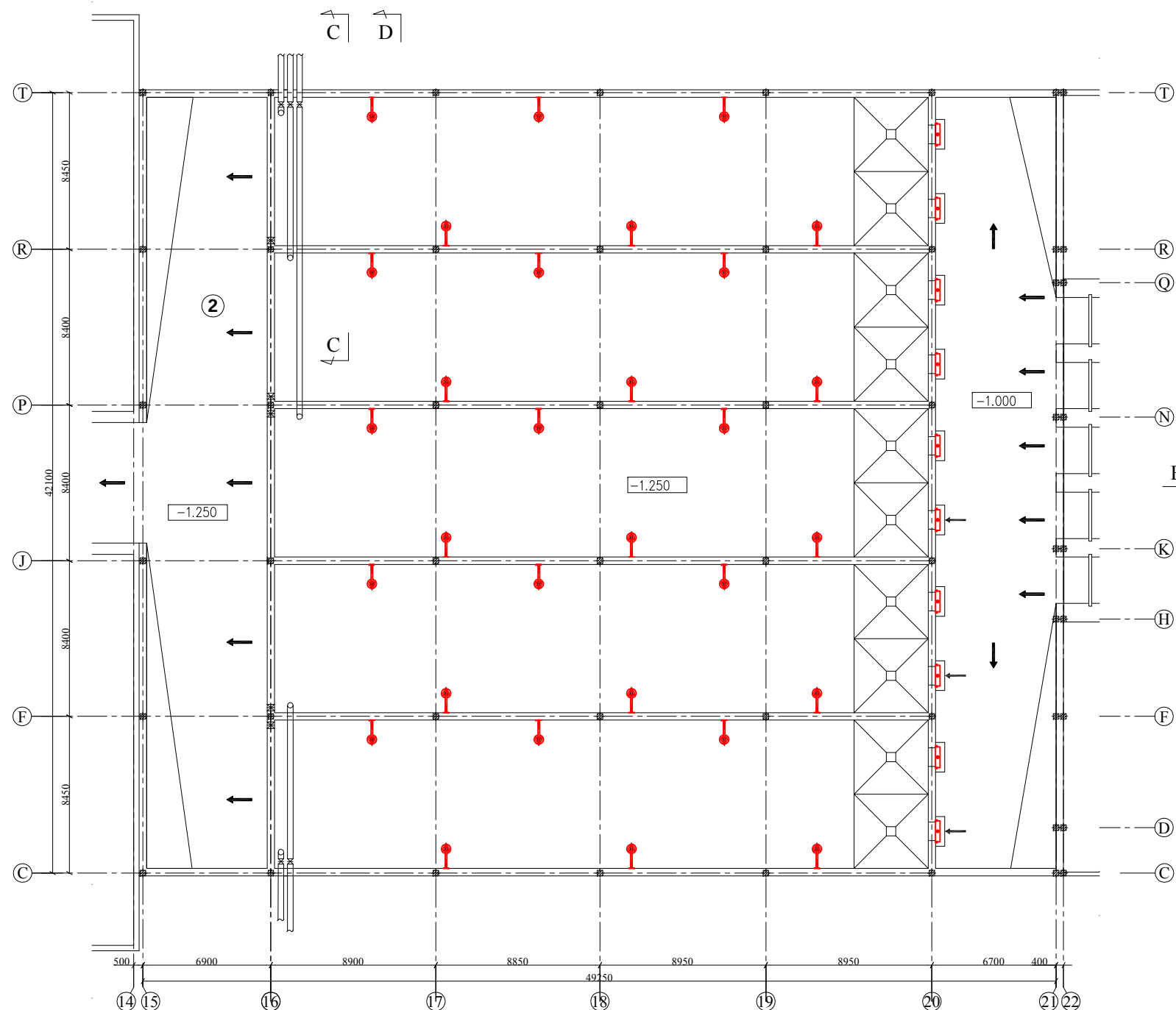
C-C SECTION SC 1:300



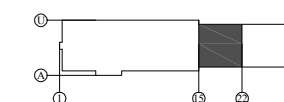
D-D SECTION SC 1:300



-5.450 FLOOR PLAN SC 1:300



-1.250 FLOOR PLAN SC 1:300



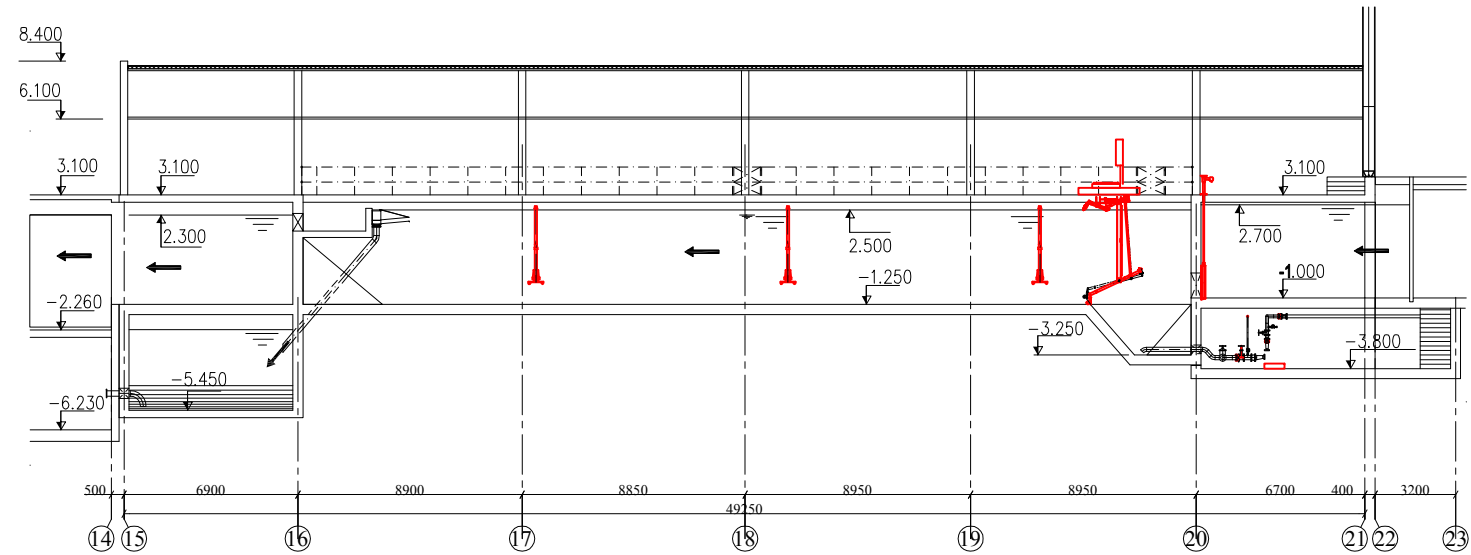
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

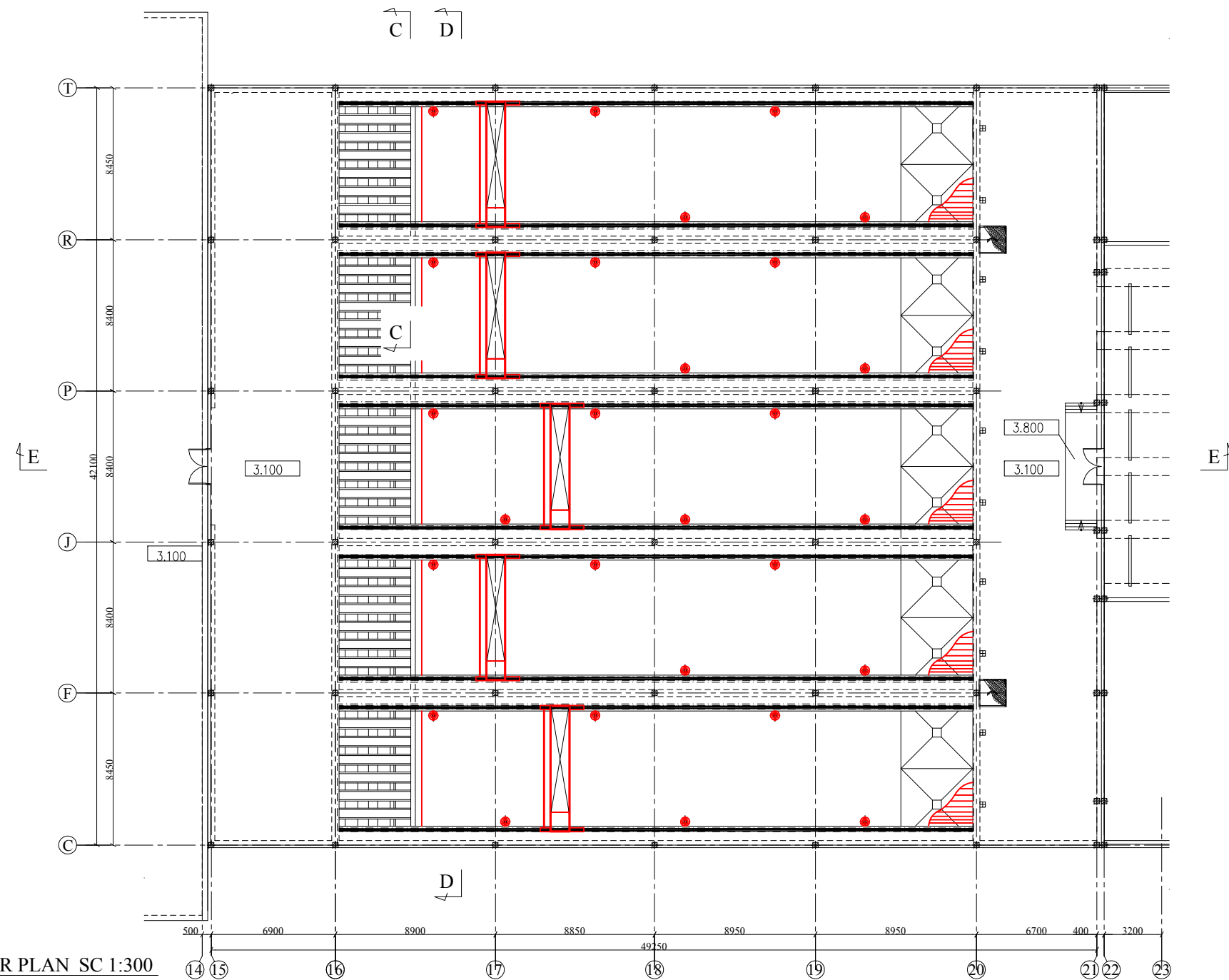
Drw no:
WWTP-06

Title: Preliminary Treatment Facilities (Block-1)

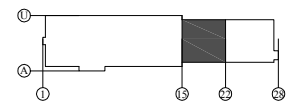
Scale:
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E-E SECTION SC 1:300



+3.100 FLOOR PLAN SC 1:300



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

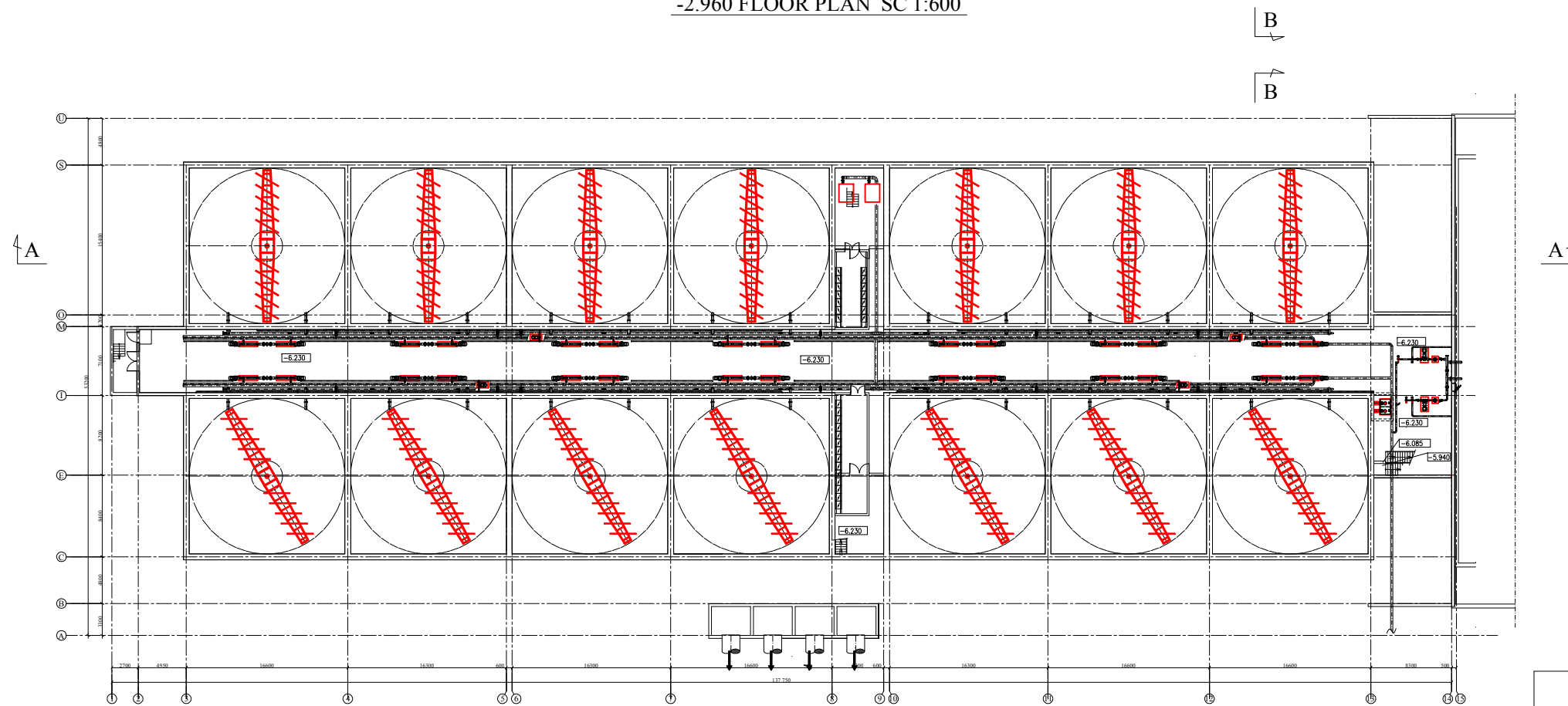
Drw no:
WWTP-07

Title: Preliminary Treatment Facilities (Block-1)

Scale:
1:300

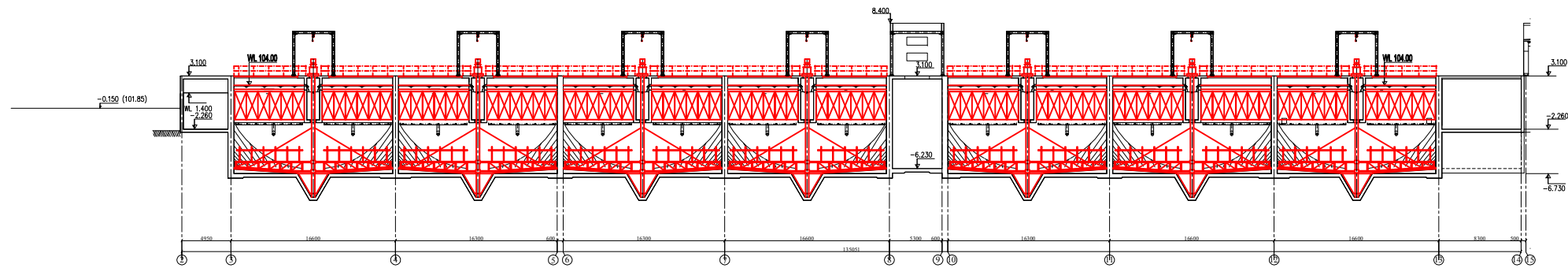


-2.960 FLOOR PLAN SC 1:600

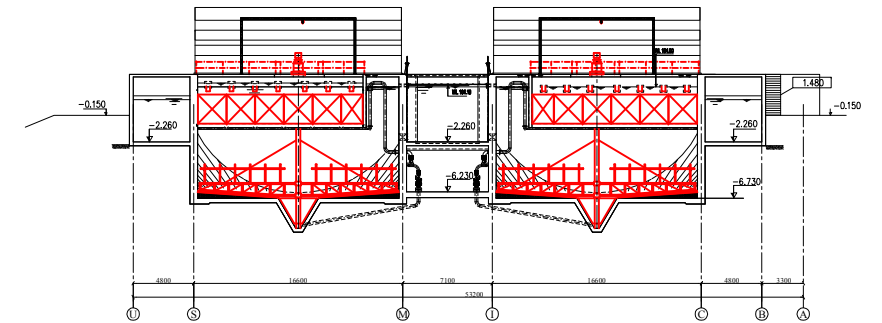


-6.230 FLOOR PLAN SC 1:600

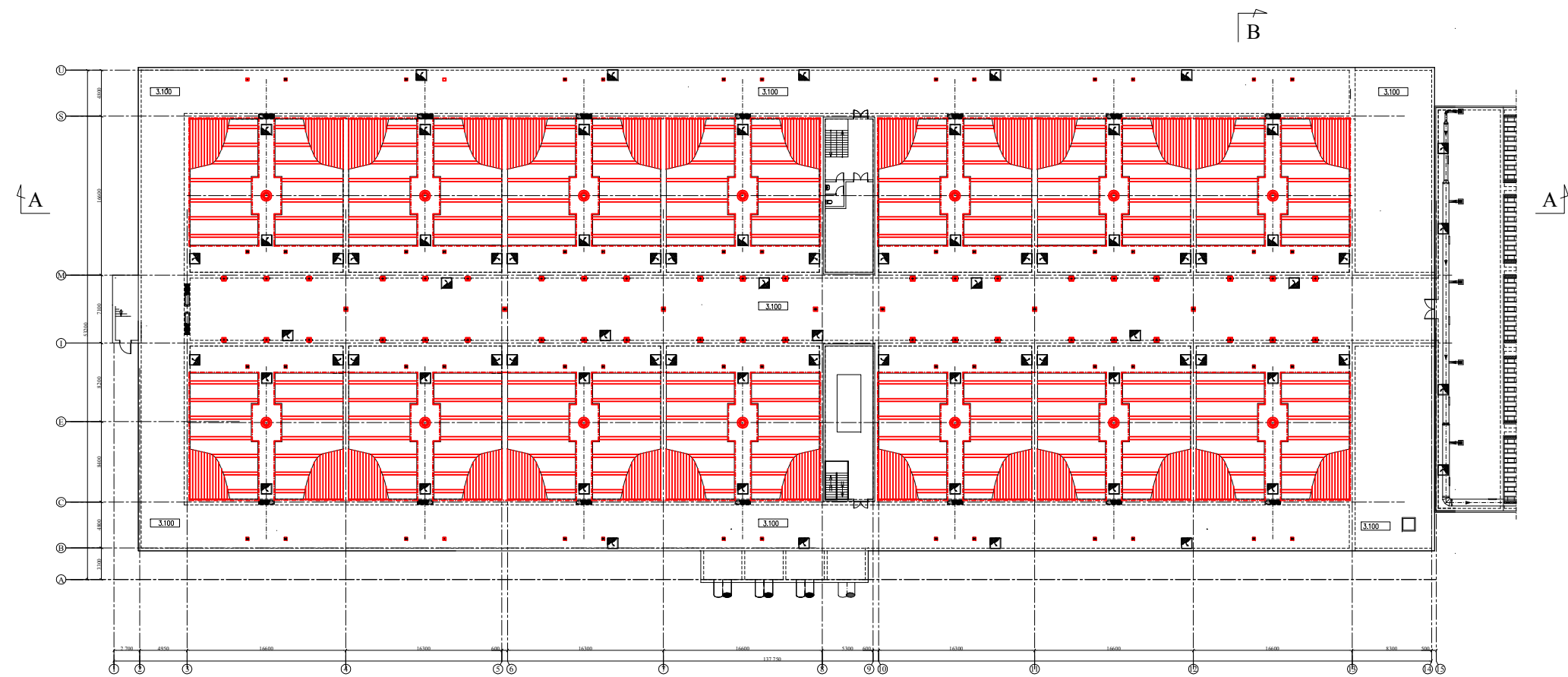
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-08
Title: Primary Treatment Facilities (Block-1)	Scale: 1:600



A-A SECTION SC 1:600



B-B SECTION SC 1:600



+3.100 FLOOR PLAN SC 1:600

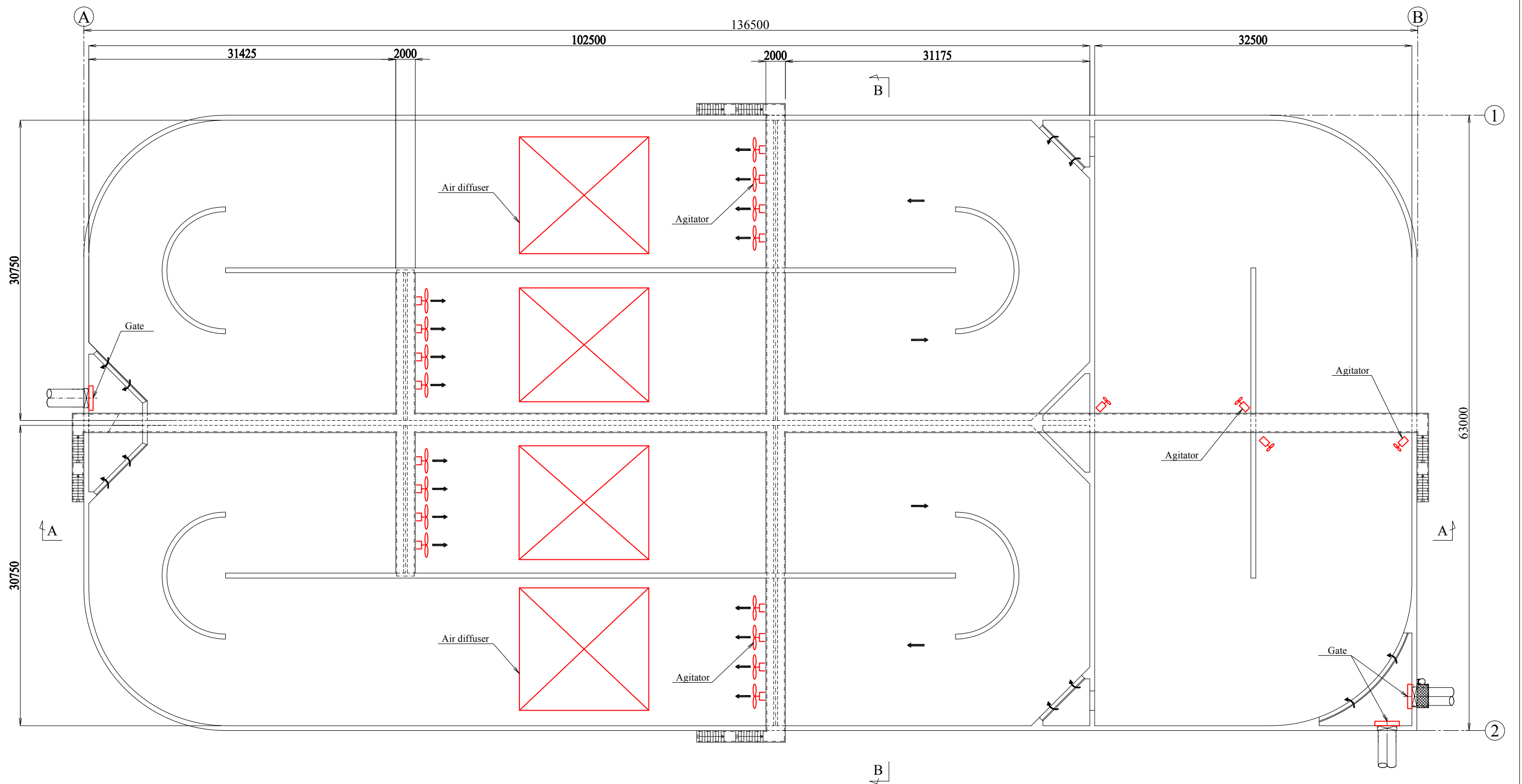
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

Drw no:
WWTP-09

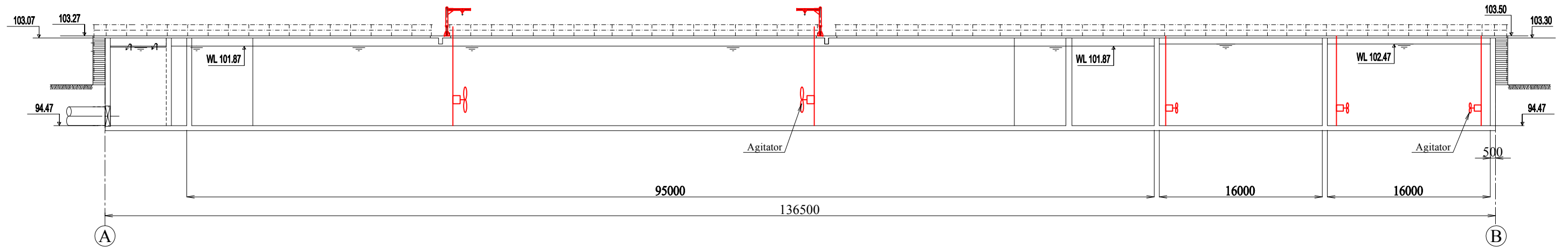
Title: Primary Treatment Facilities (Block-1)

Scale:
1:600

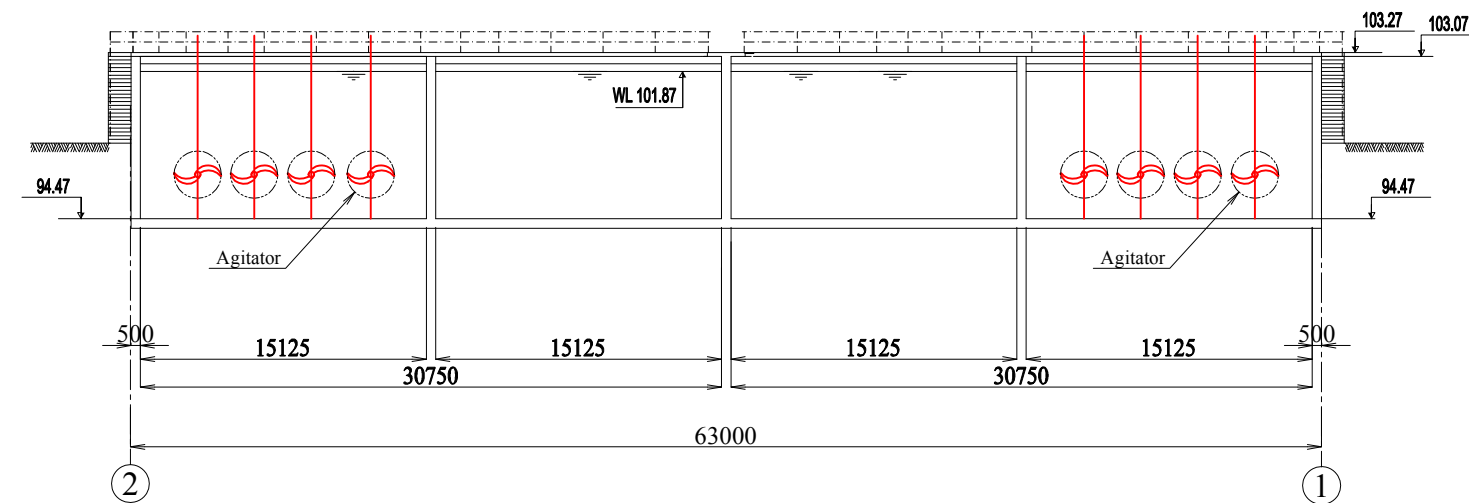


GROUND FLOOR PLAN SC 1:400

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-10
Title: Aeration Tank (Block-1)	Scale: 1:400



A-A SECTION SC 1:400



B-B SECTION SC 1:400

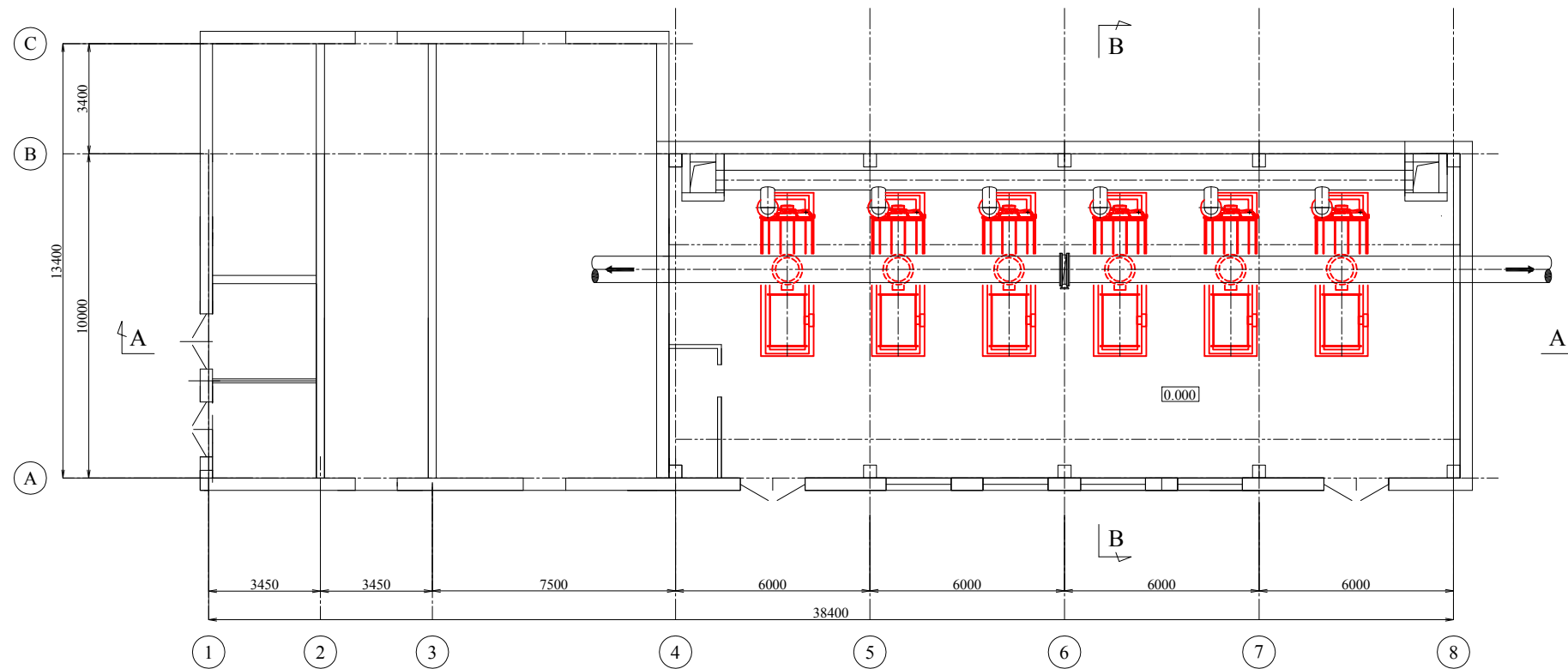
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

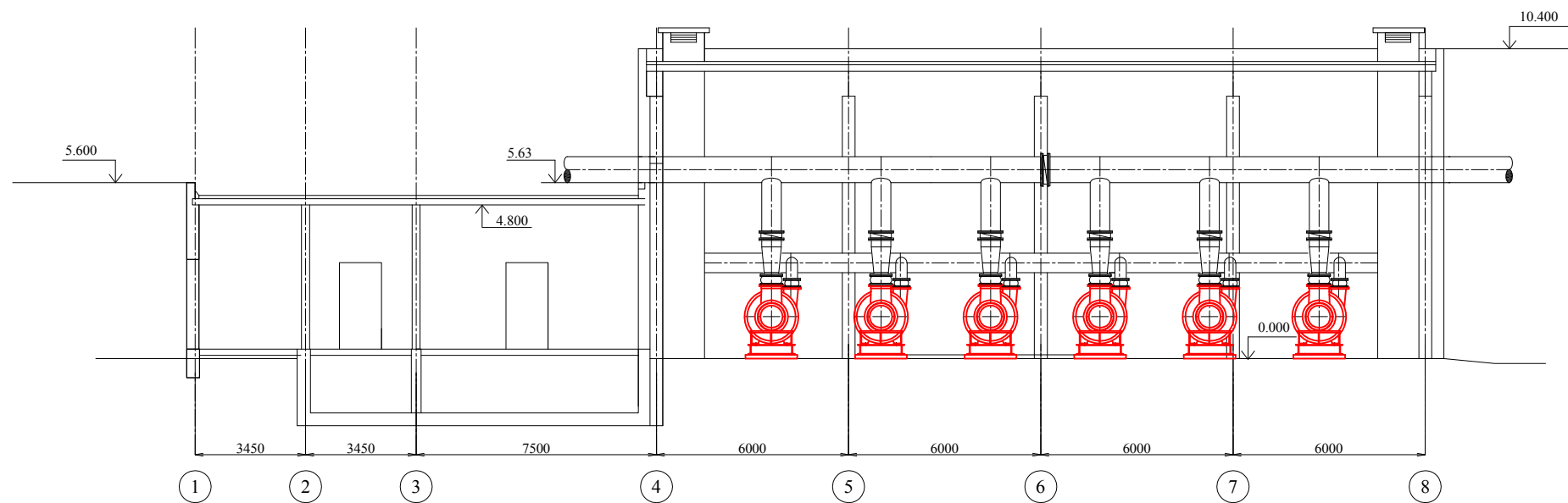
Drw no:
WWTP-11

Title: Aeration Tank (Block-1)

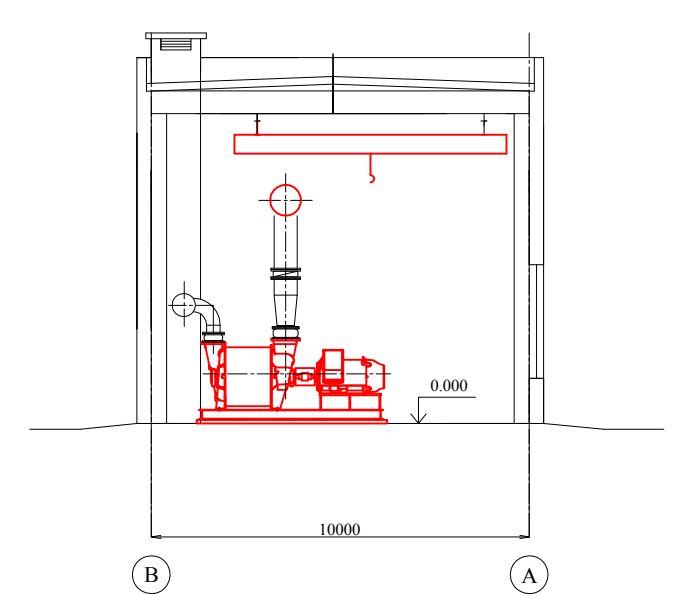
Scale:
1:400



GROUND FLOOR PLAN SC 1:200

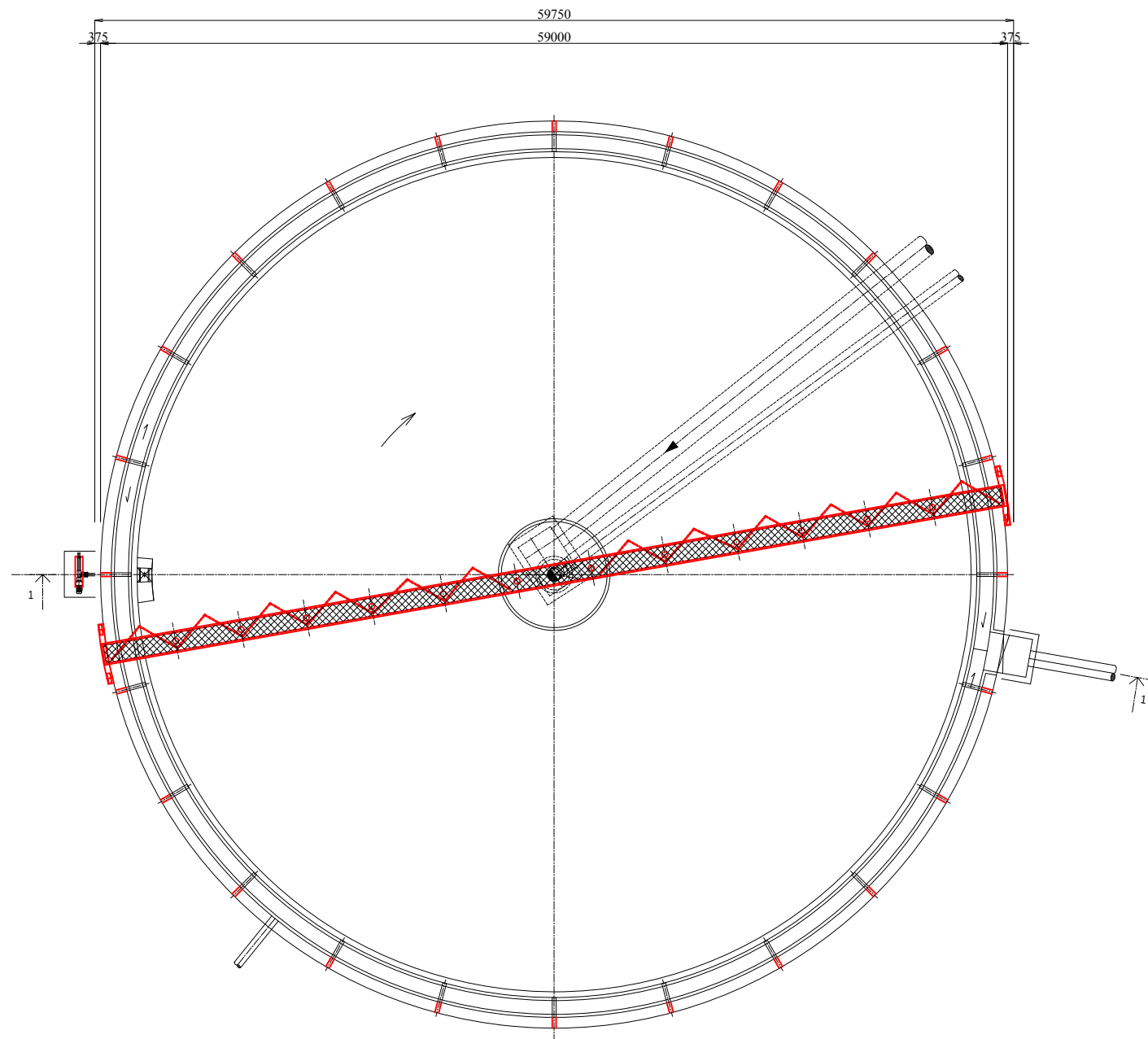


A-A SECTION SC 1:200

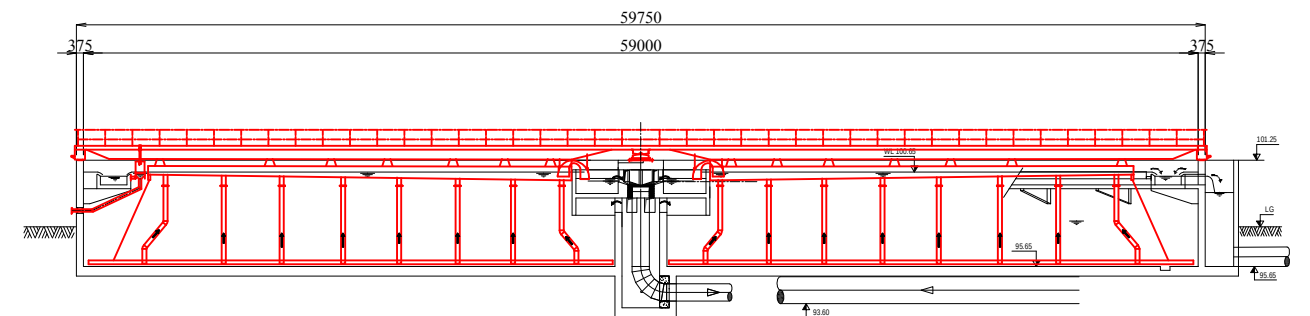


B-B SECTION SC 1:200

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-12
Title: Blower Building (Block-1)	Scale: 1:200



GROUND FLOOR PLAN SC 1:400



A-A SECTION SC 1:400

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

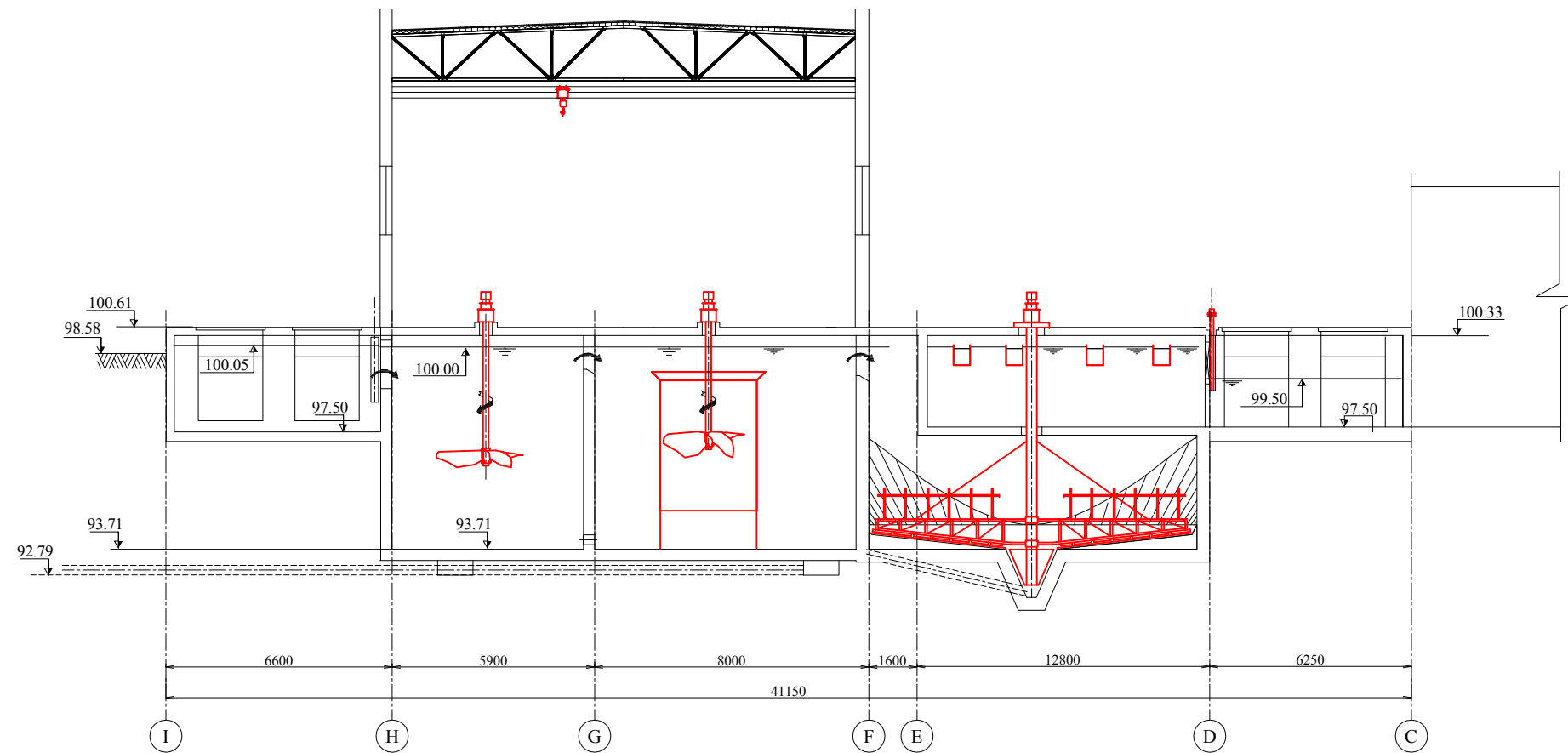
Drw no:
WWTP-13

Title: Secondary Settling tank (Block-1)

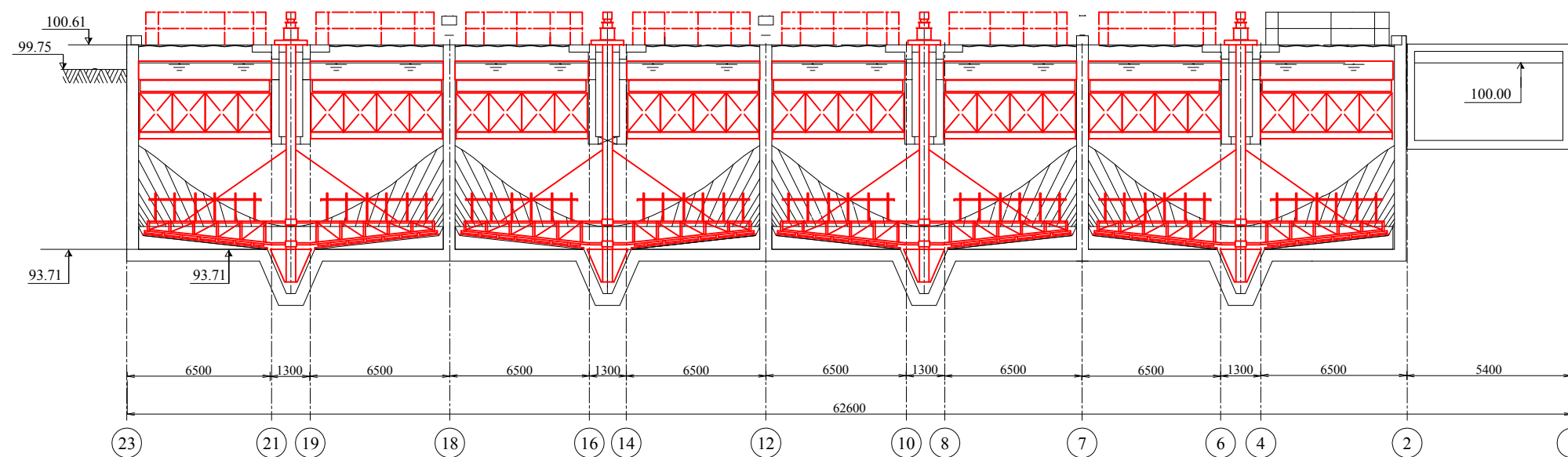
Scale:
1:400



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-14
Title: Tertiary Treatment Facilities (Block-1)	Scale: 1:300

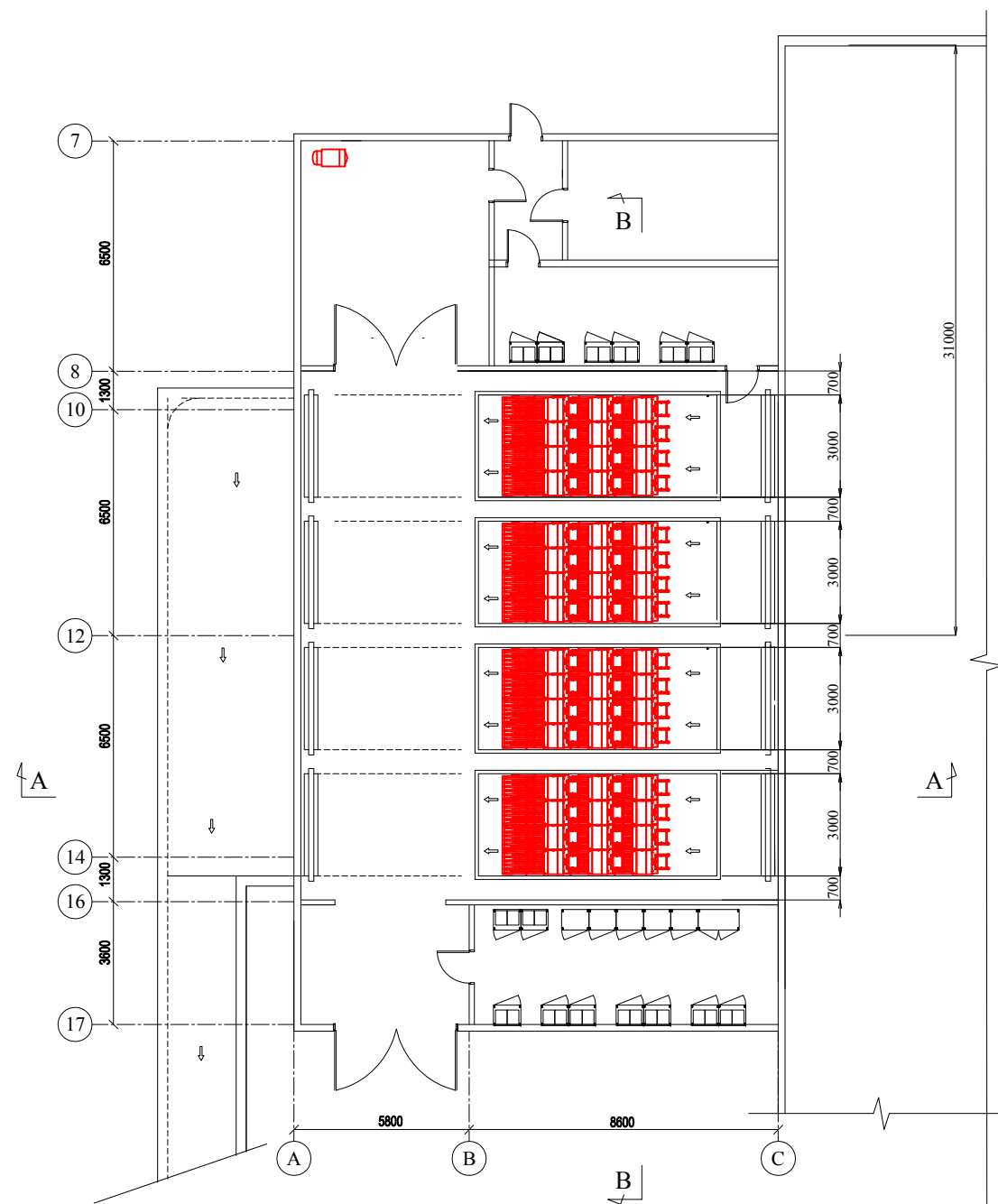


A-A SECTION SC 1:200

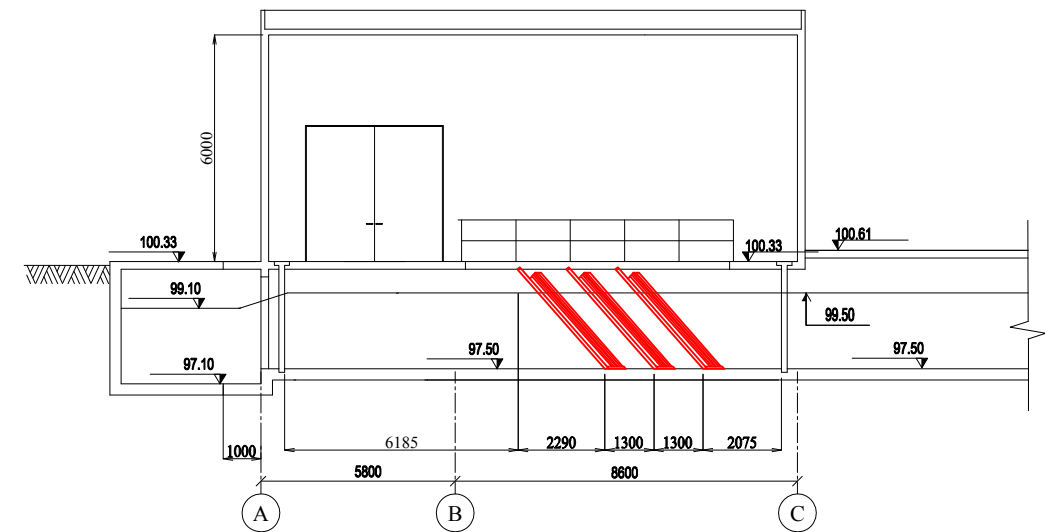


B-B SECTION SC 1:200

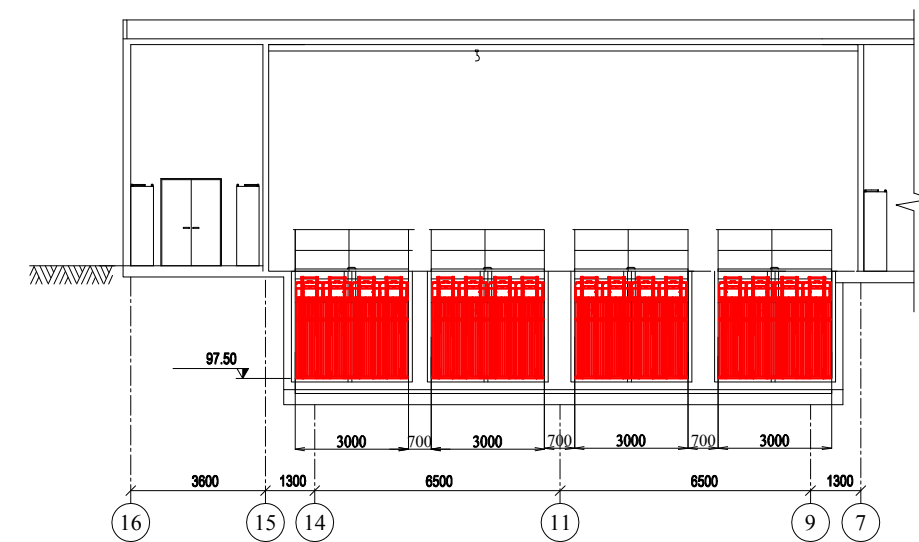
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-15
Title: Tertiary Treatment Facilities (Block-1)	Scale: 1:200



GROUND FLOOR PLAN SC 1:200

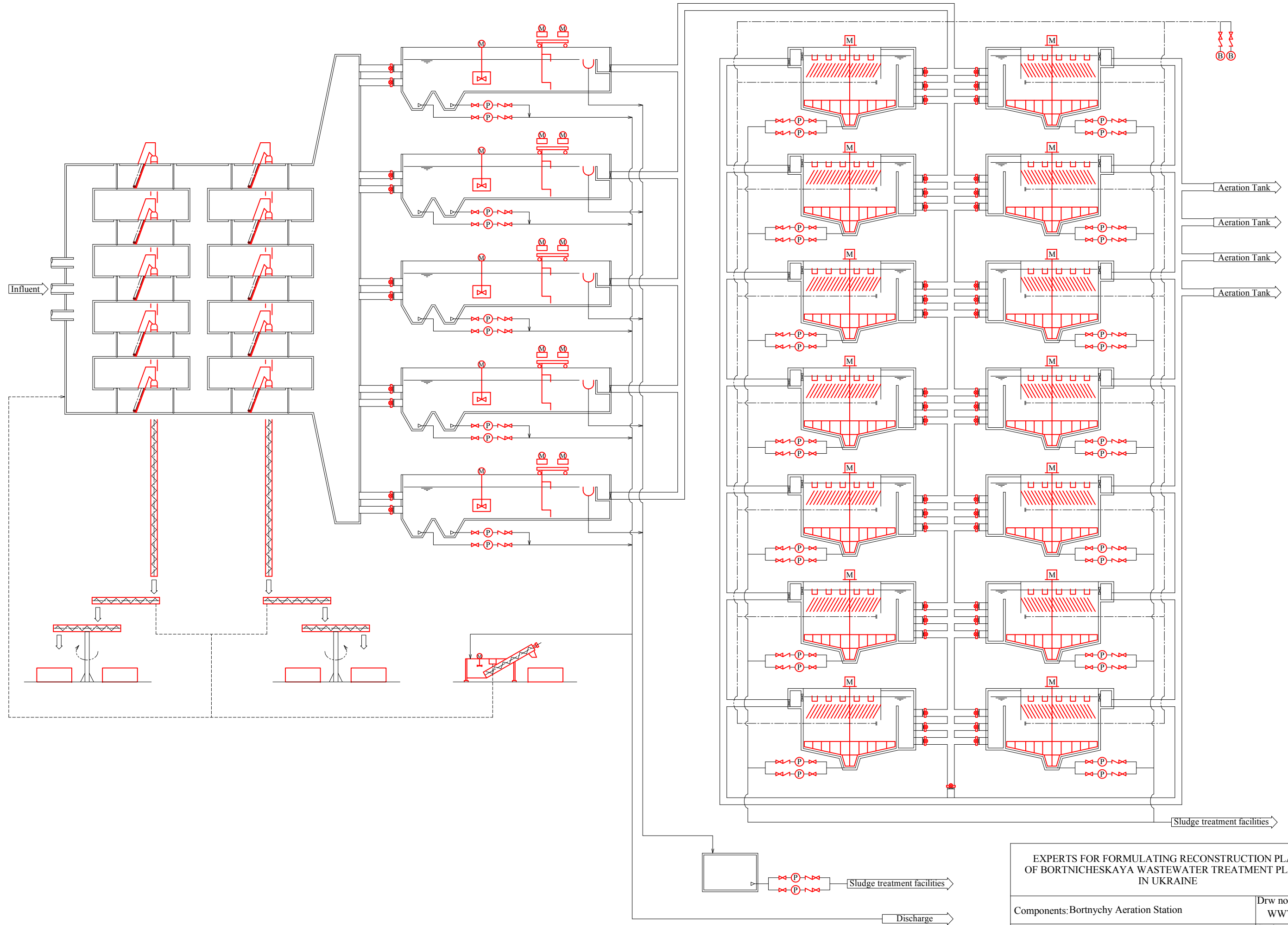


A-A SECTION SC 1:200

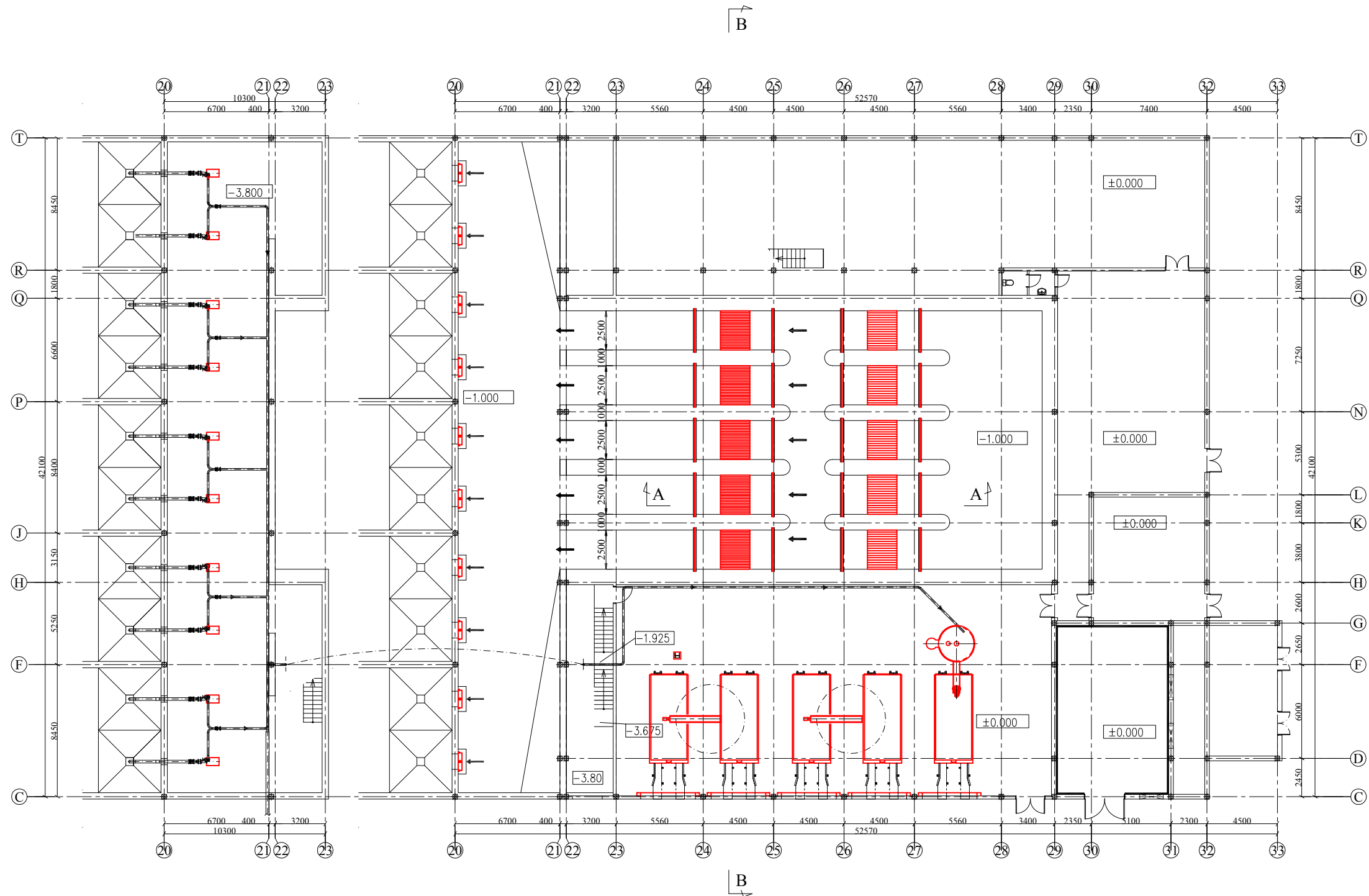


B-B SECTION SC 1:200

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-16
Title: Disinfection Facilities (Block-1)	Scale: 1:200



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-17
Title: Preliminary Treatment and Primary Treatment Process (Block-2)	Scale: NONE



-3.800 FLOOR PLAN SC 1:300

±0.000 FLOOR PLAN SC 1:300

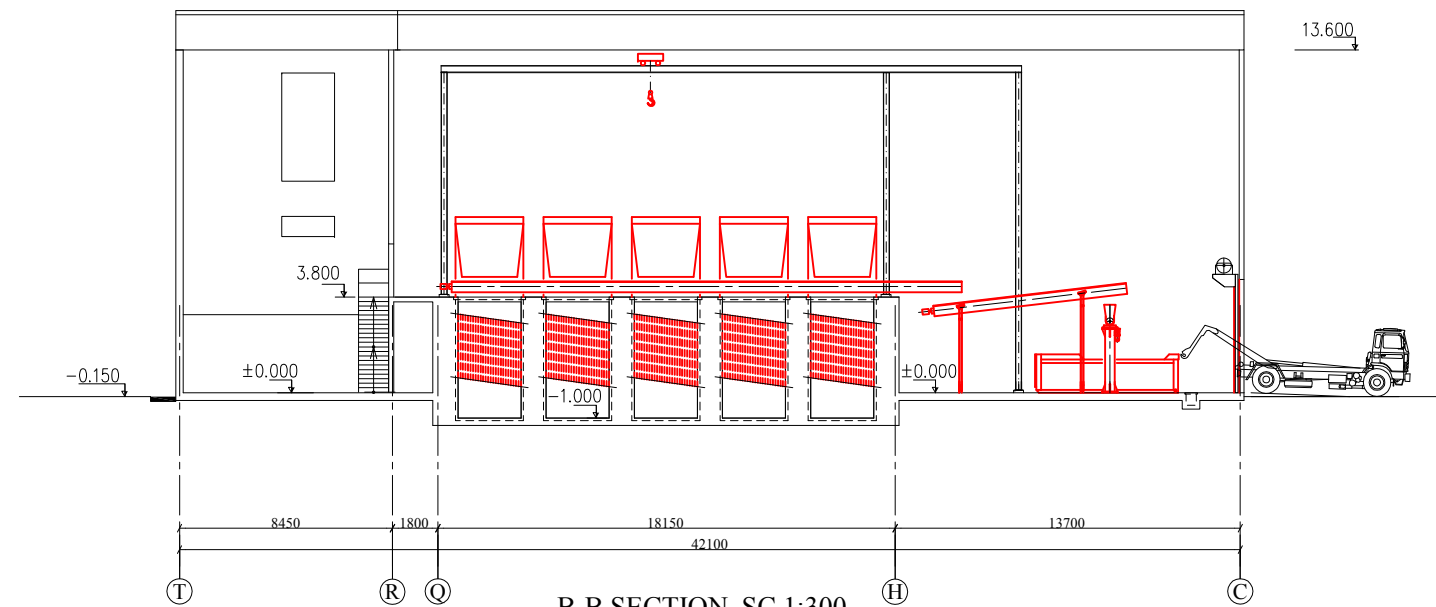
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

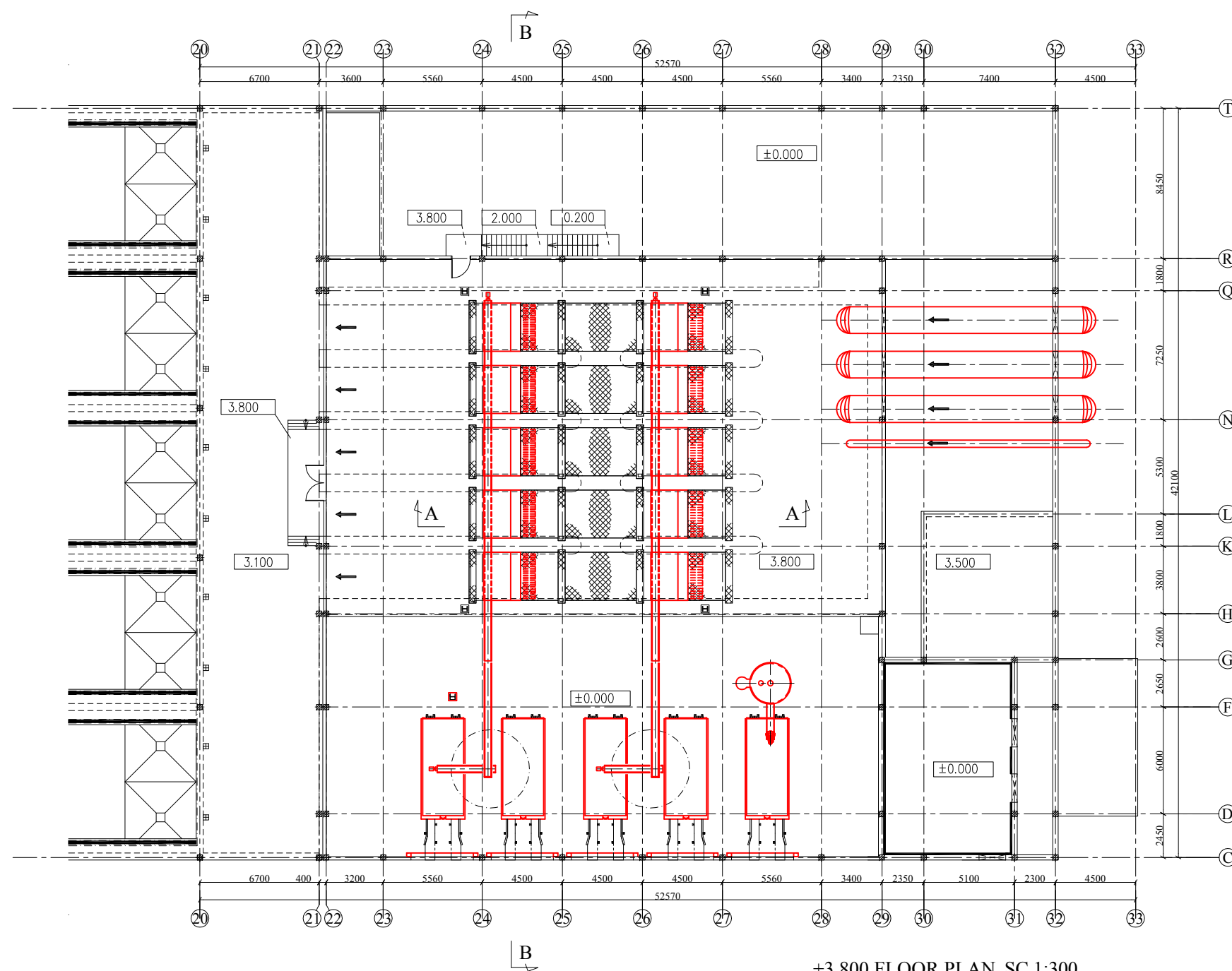
Drw no:
WWTP-18

Title: Preliminary Treatment Facilities (Block-2)

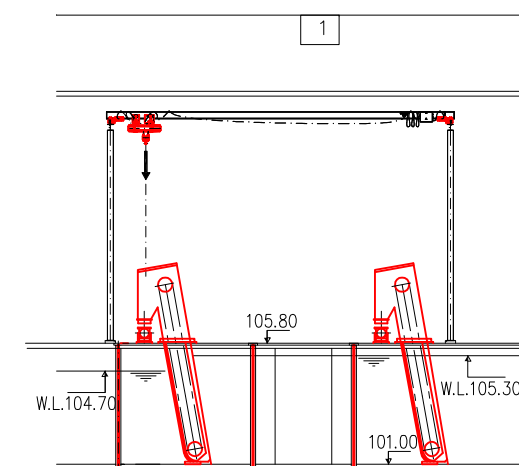
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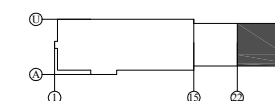
B-B SECTION SC 1:300



+3.800 FLOOR PLAN SC 1:300



A-A SECTION SC 1:300



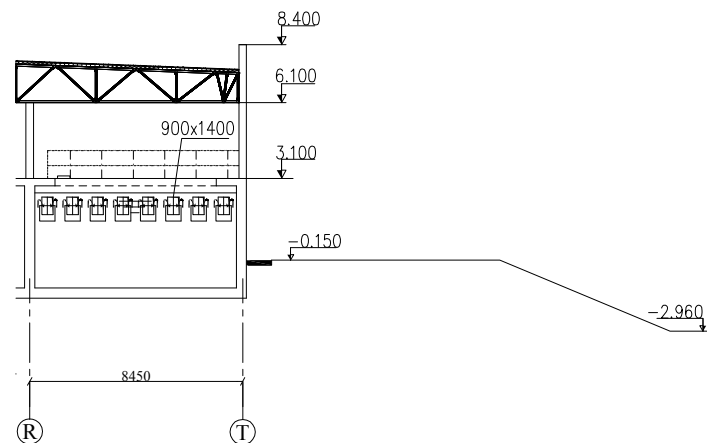
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

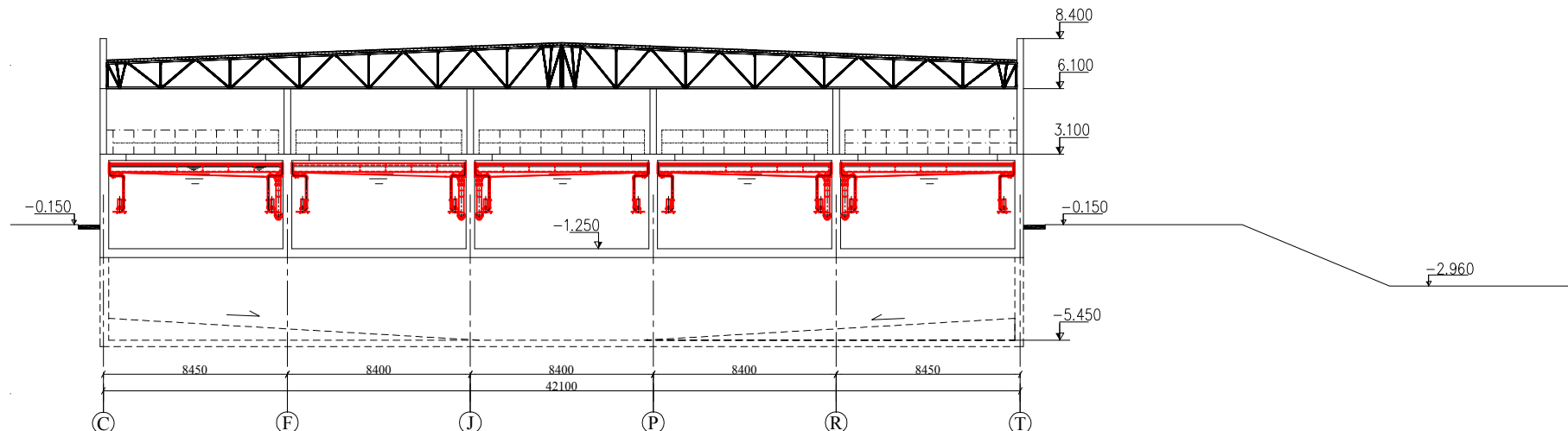
Drw no:
WWTP-19

Title: Preliminary Treatment Facilities (Block-2)

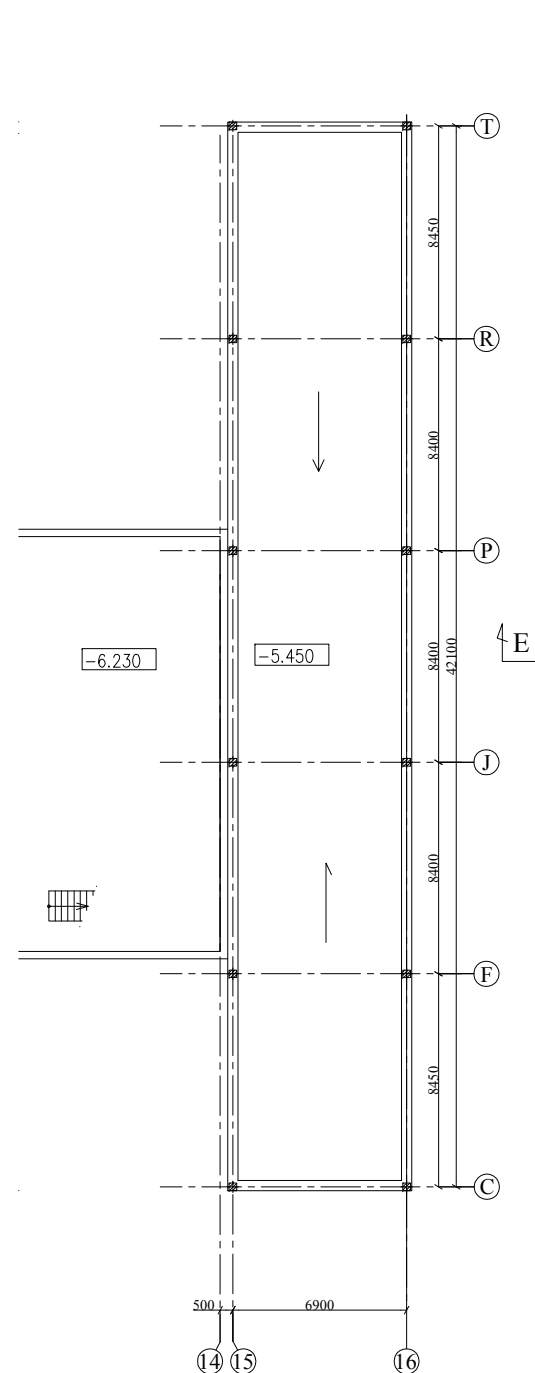
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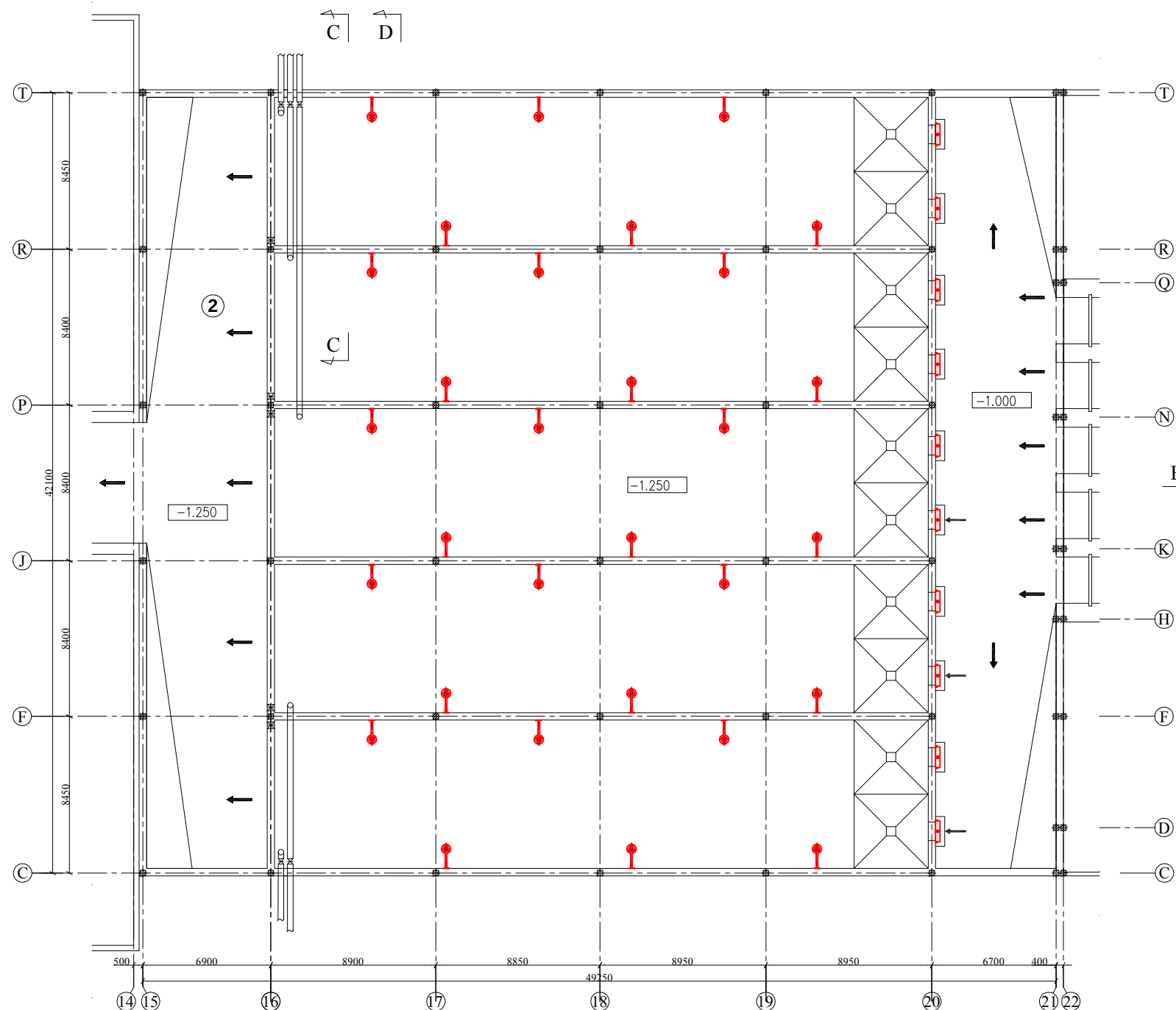
C-C SECTION SC 1:300



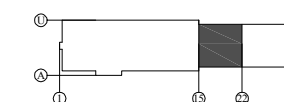
D-D SECTION SC 1:300



-5.450 FLOOR PLAN SC 1:300



-1.250 FLOOR PLAN SC 1:300



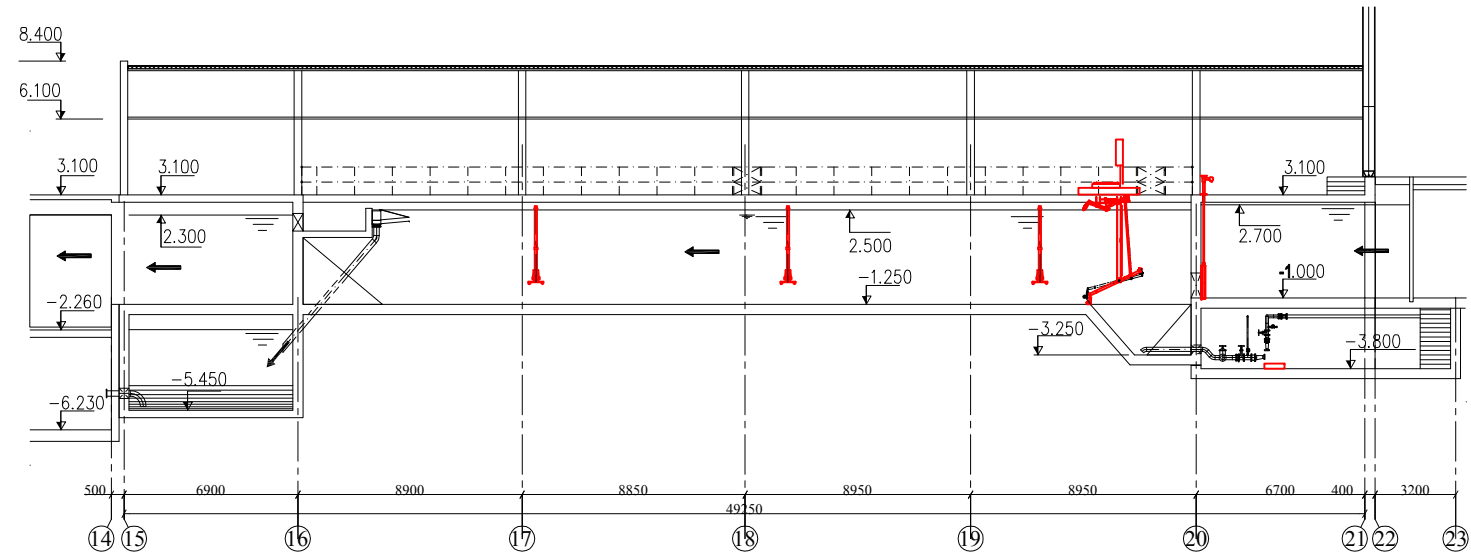
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

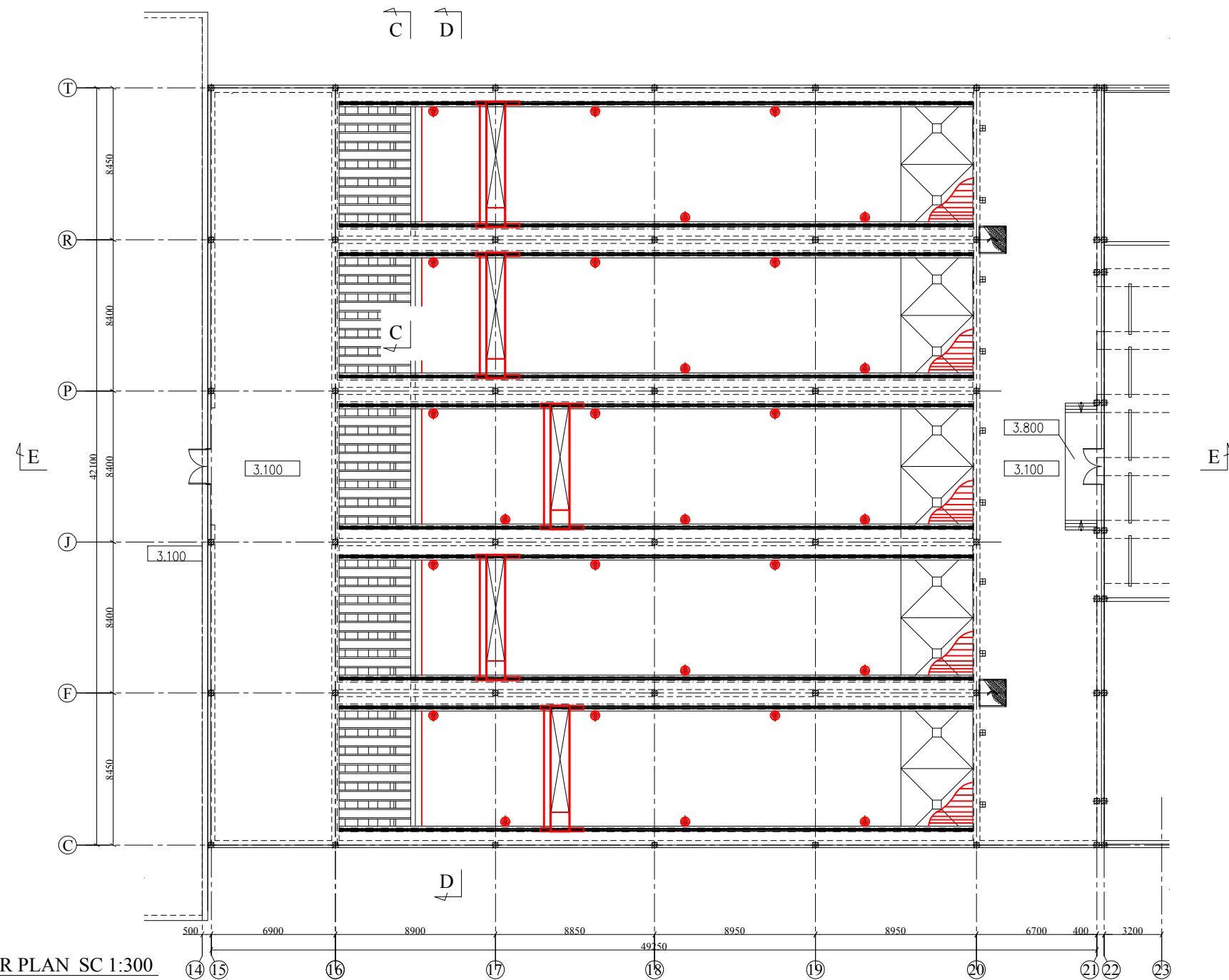
Drw no:
WWTP-20

Title: Preliminary Treatment Facilities (Block-2)

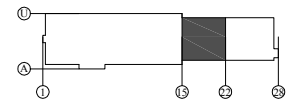
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E-E SECTION SC 1:300



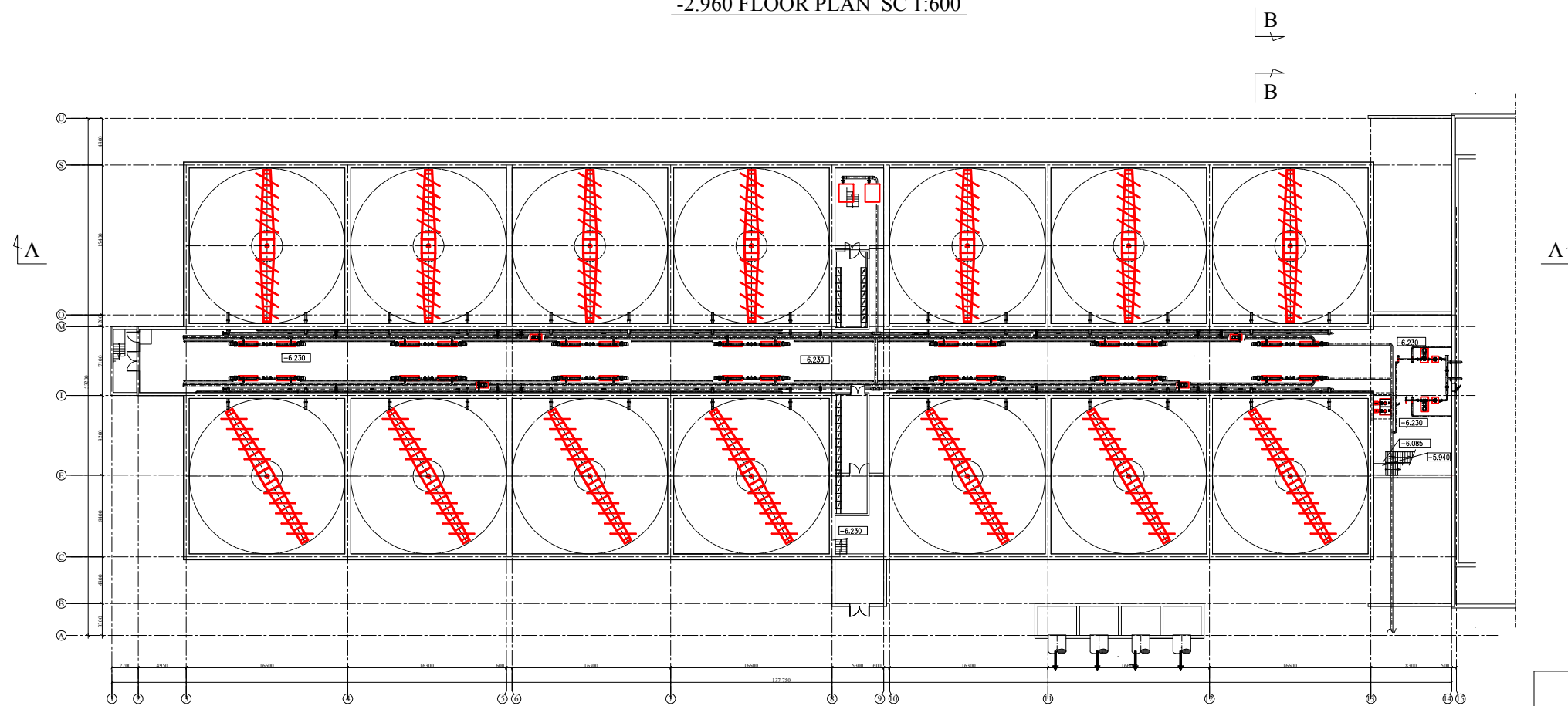
+3.100 FLOOR PLAN SC 1:300



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-21
Title: Preliminary Treatment Facilities (Block-2)	Scale: 1:300

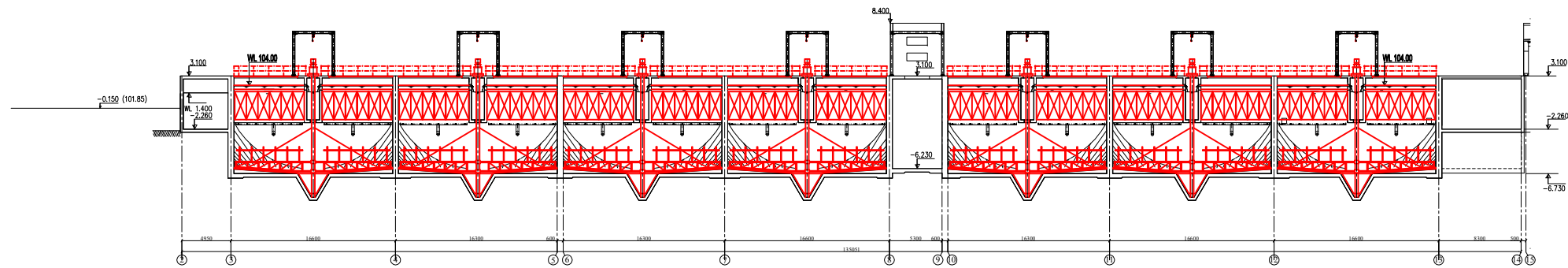


-2.960 FLOOR PLAN SC 1:600

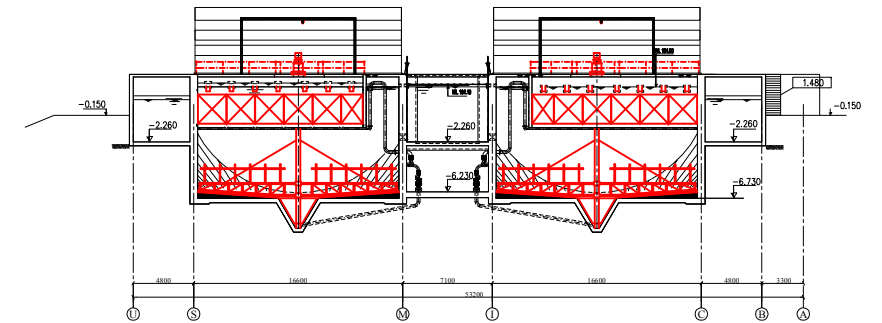


-6.230 FLOOR PLAN SC 1:600

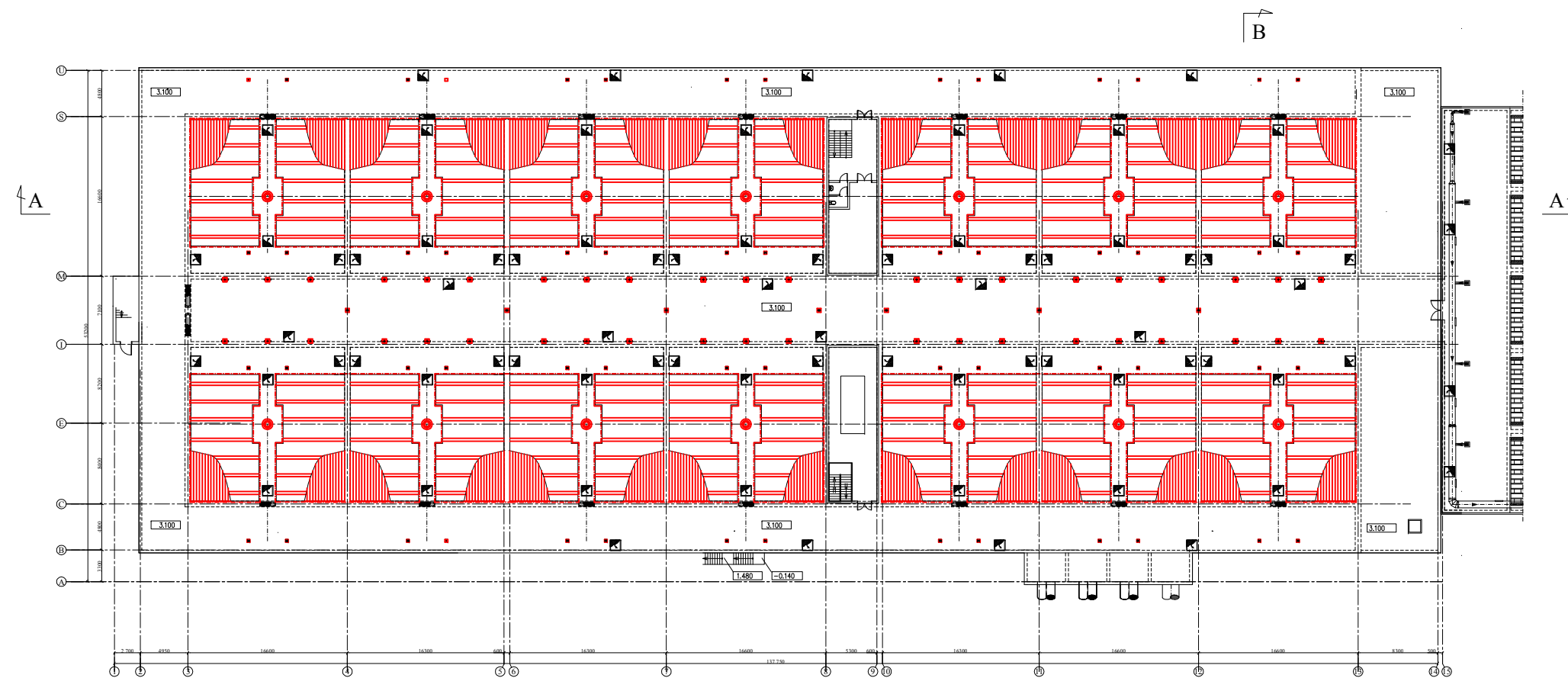
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-22
Title: Primary Treatment Facilities (Block-2)	Scale: 1:600



A-A SECTION SC 1:600



B-B SECTION SC 1:600



+3.100 FLOOR PLAN SC 1:600

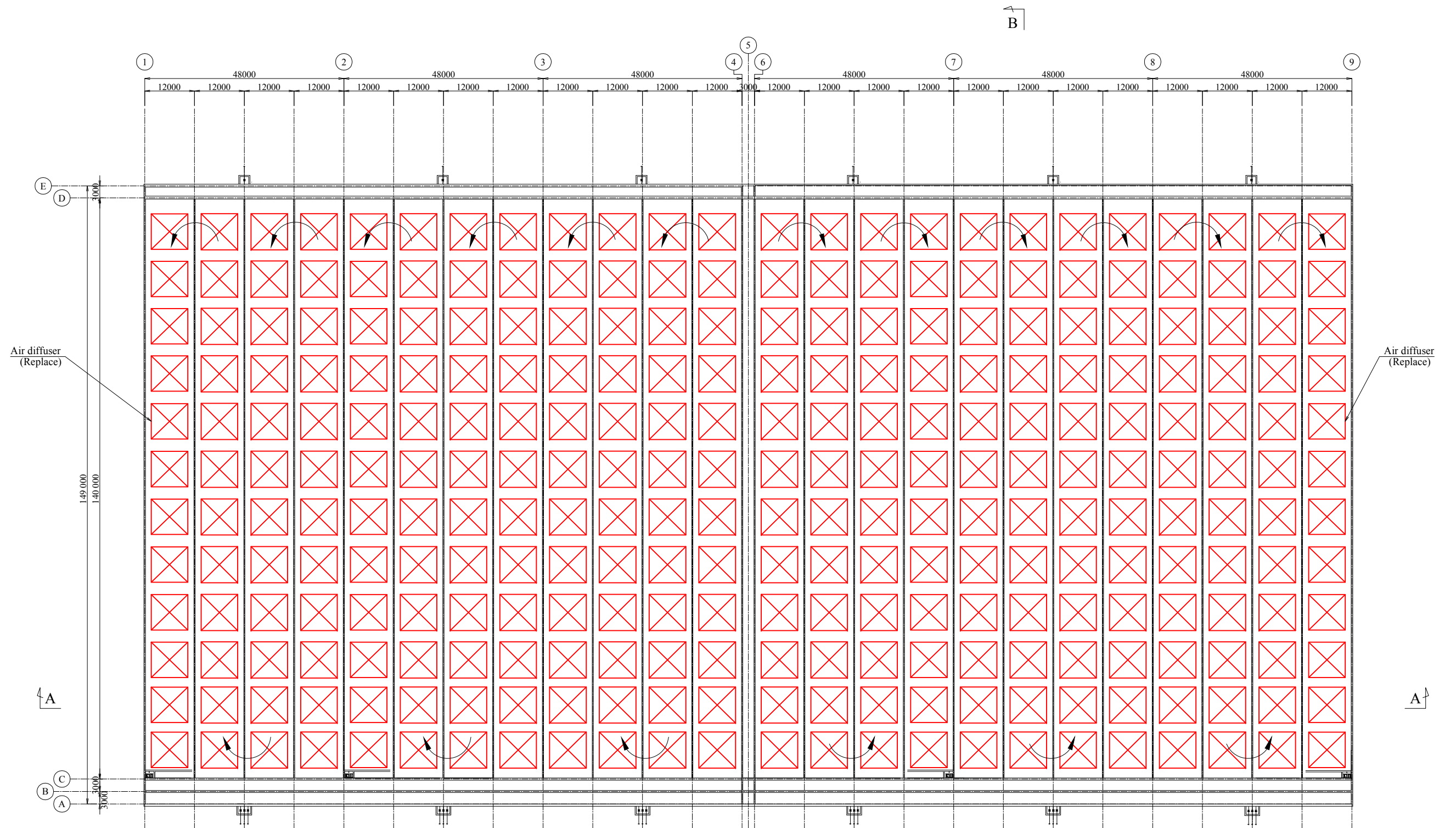
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

Drw no:
WWTP-23

Title: Primary Treatment Facilities (Block-2)

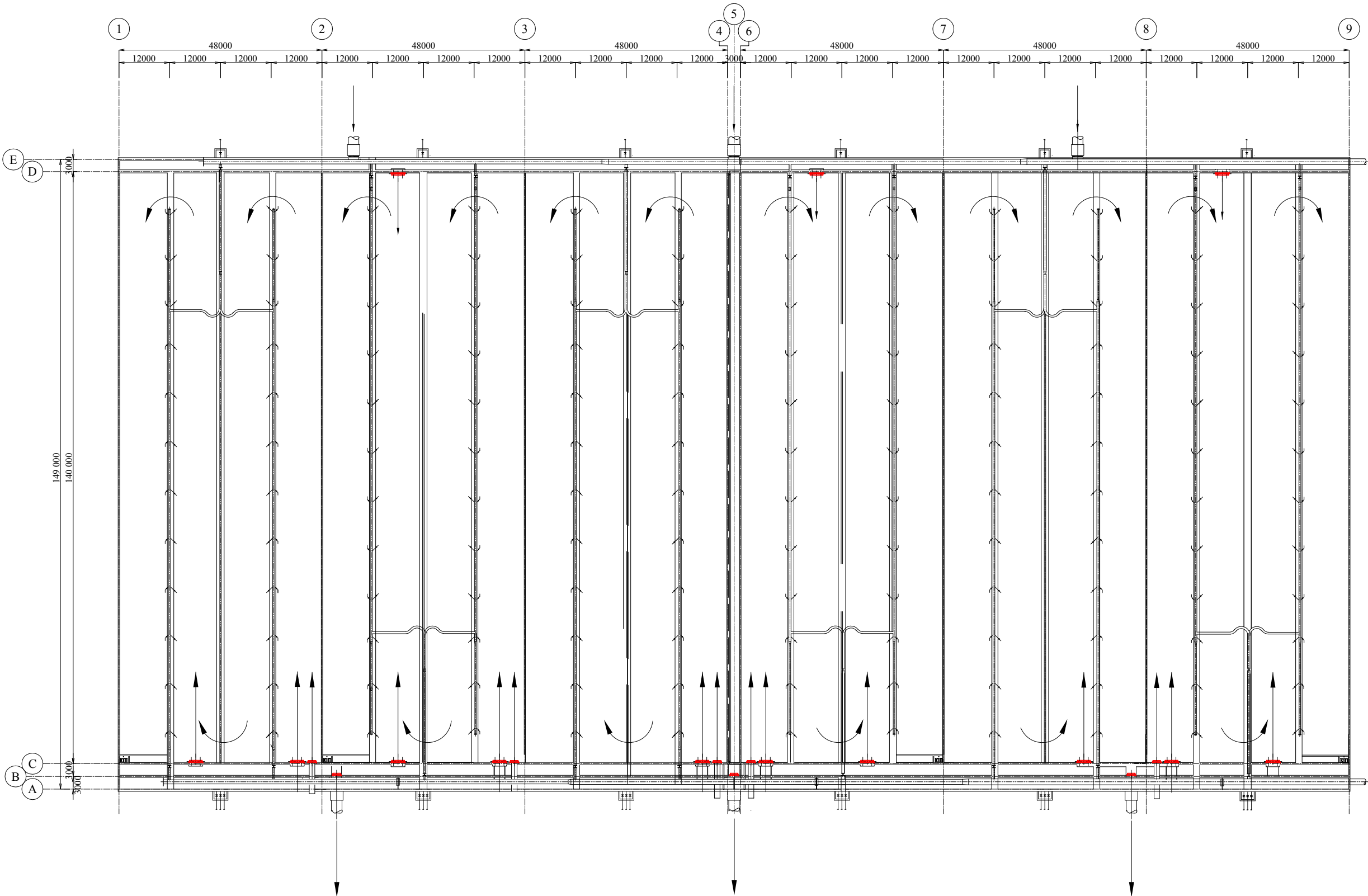
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1:600



LOWER PLAN SC 1:1000

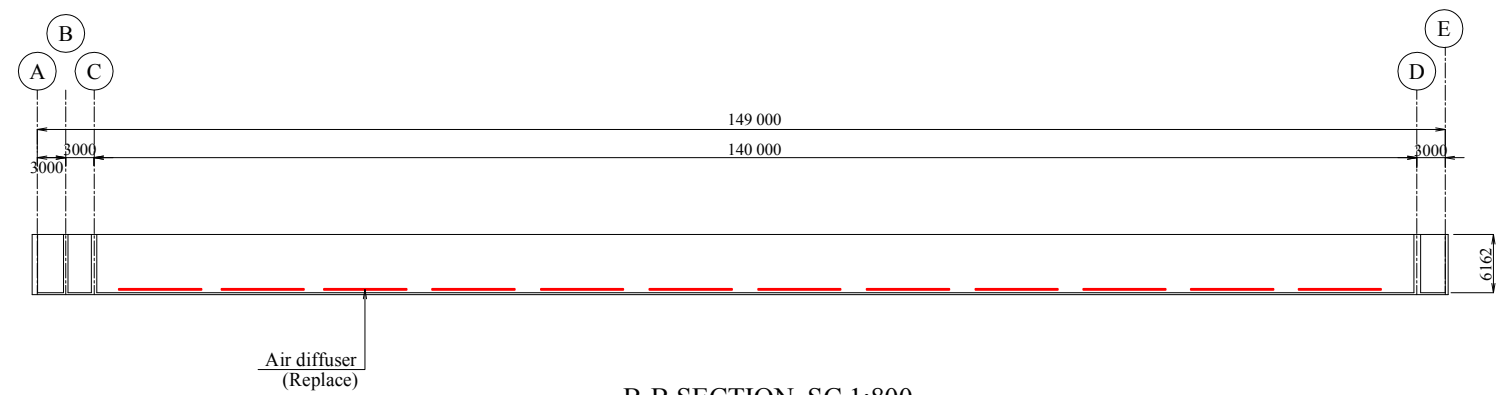
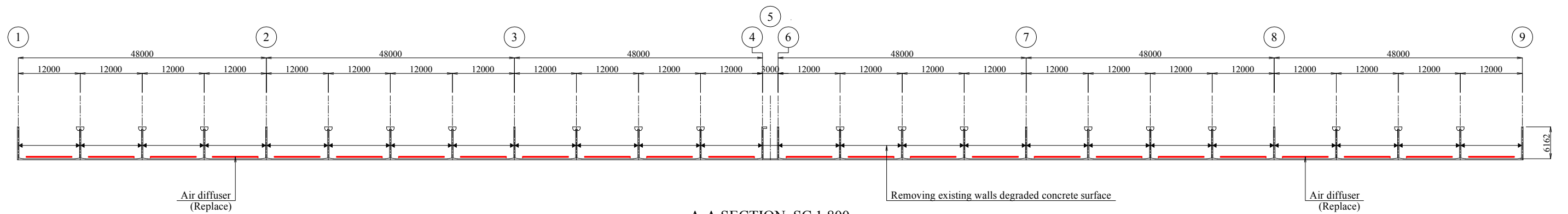
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-24
Title: Aeration Tank (Block-2)	Scale: 1:1000

notice: Removing existing walls degraded concrete surface by 10 mm thickness using water jet and to be refilled with mortar by 30 mm thickness

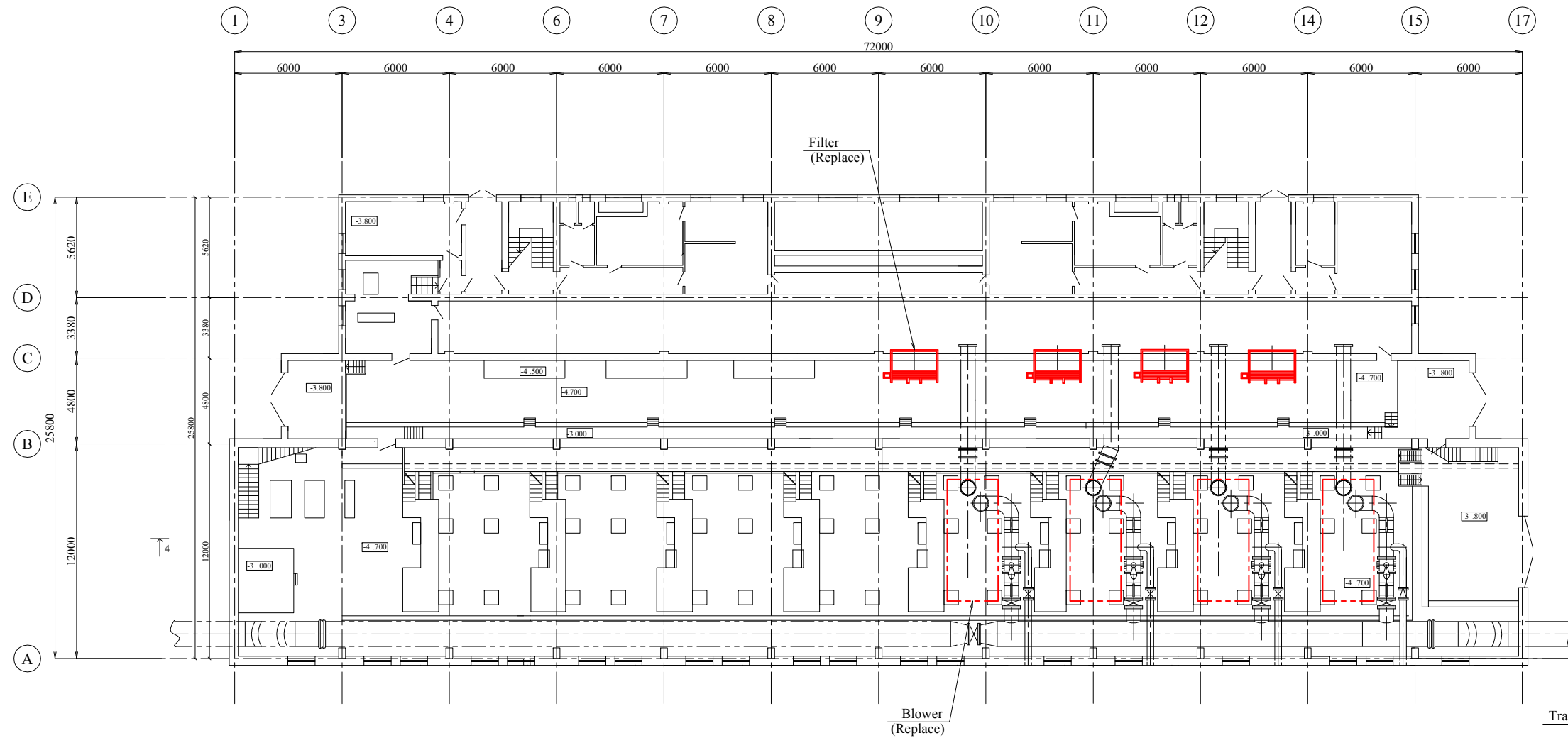


UPPER PLAN SC 1:1000

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-25
Title: Aeration Tank (Block-2)	Scale: 1:10000



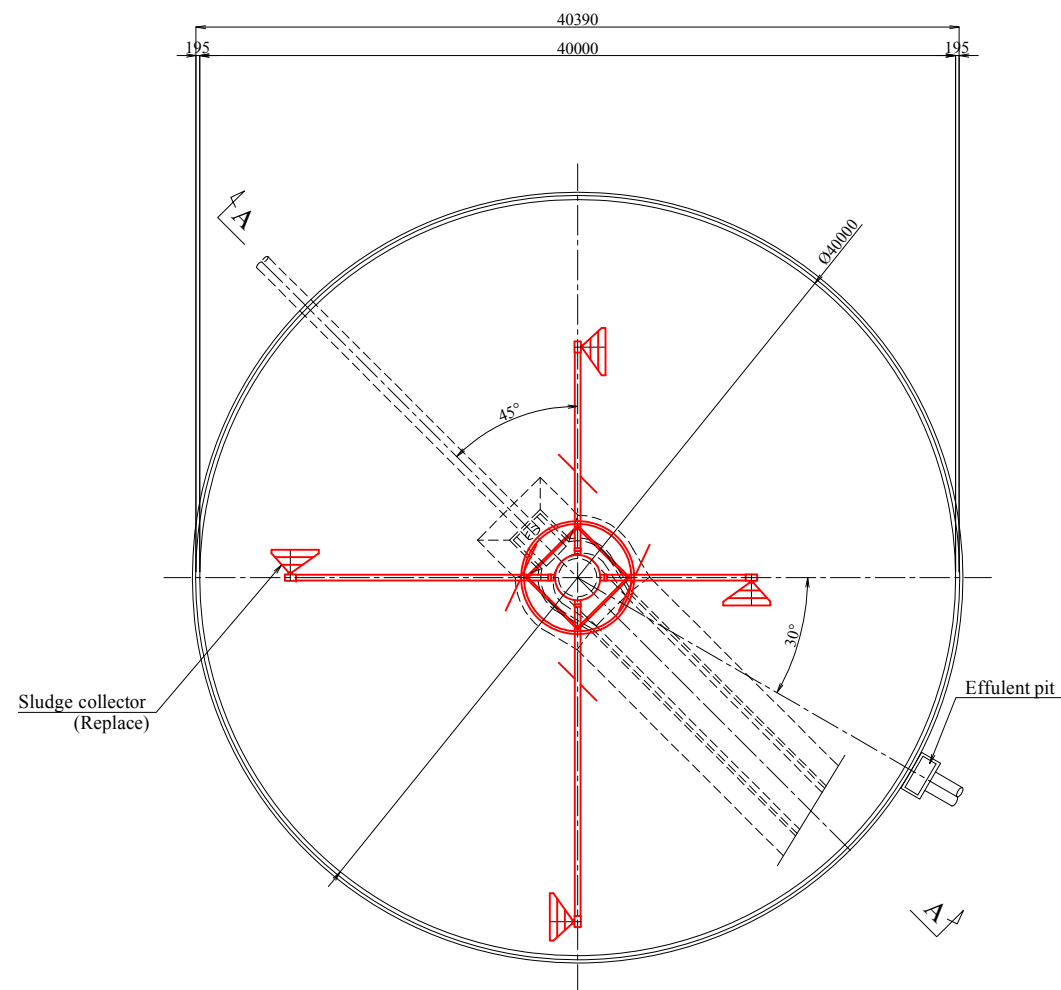
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-26
Title: Aeration Tank (Block-2)	Scale: 1:800



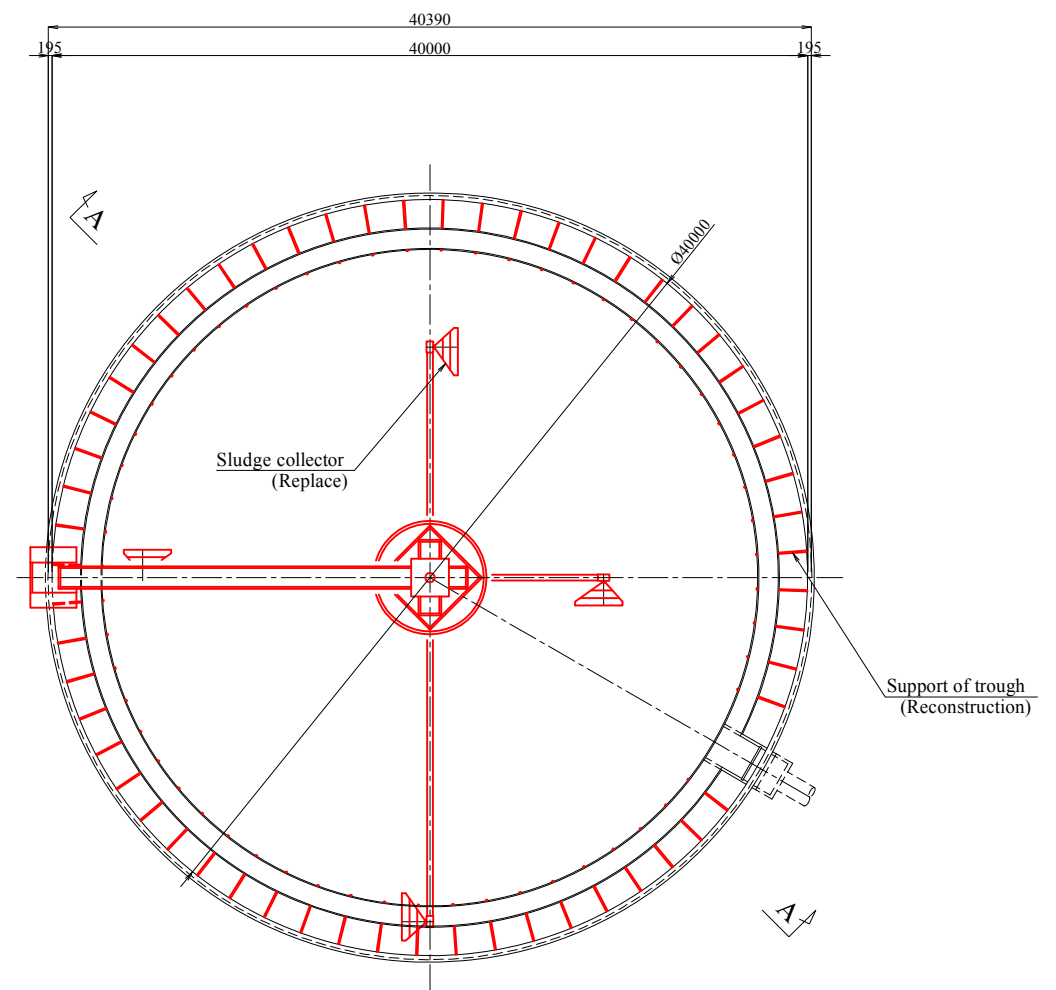
LOWER PLAN SC 1:300

UPPER PLAN SC 1:300

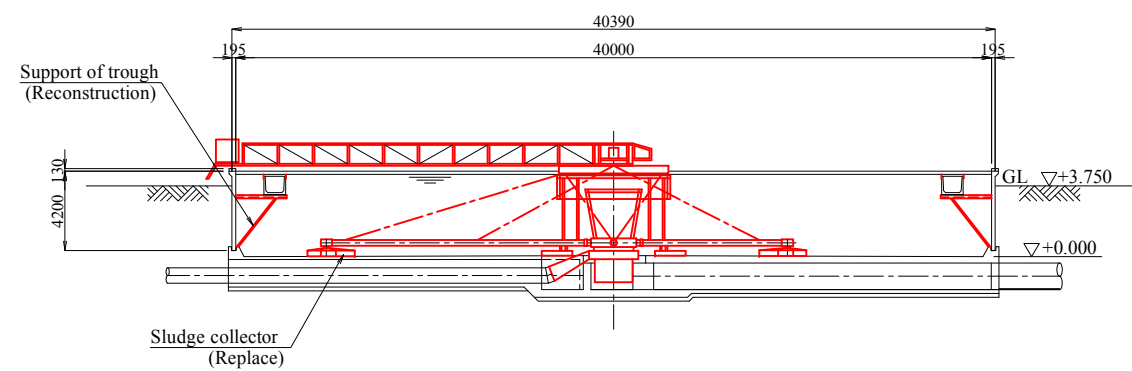
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-27
Title: Blower Building (Block-2)	Scale: 1:300



LOWER PLAN SC 1:400

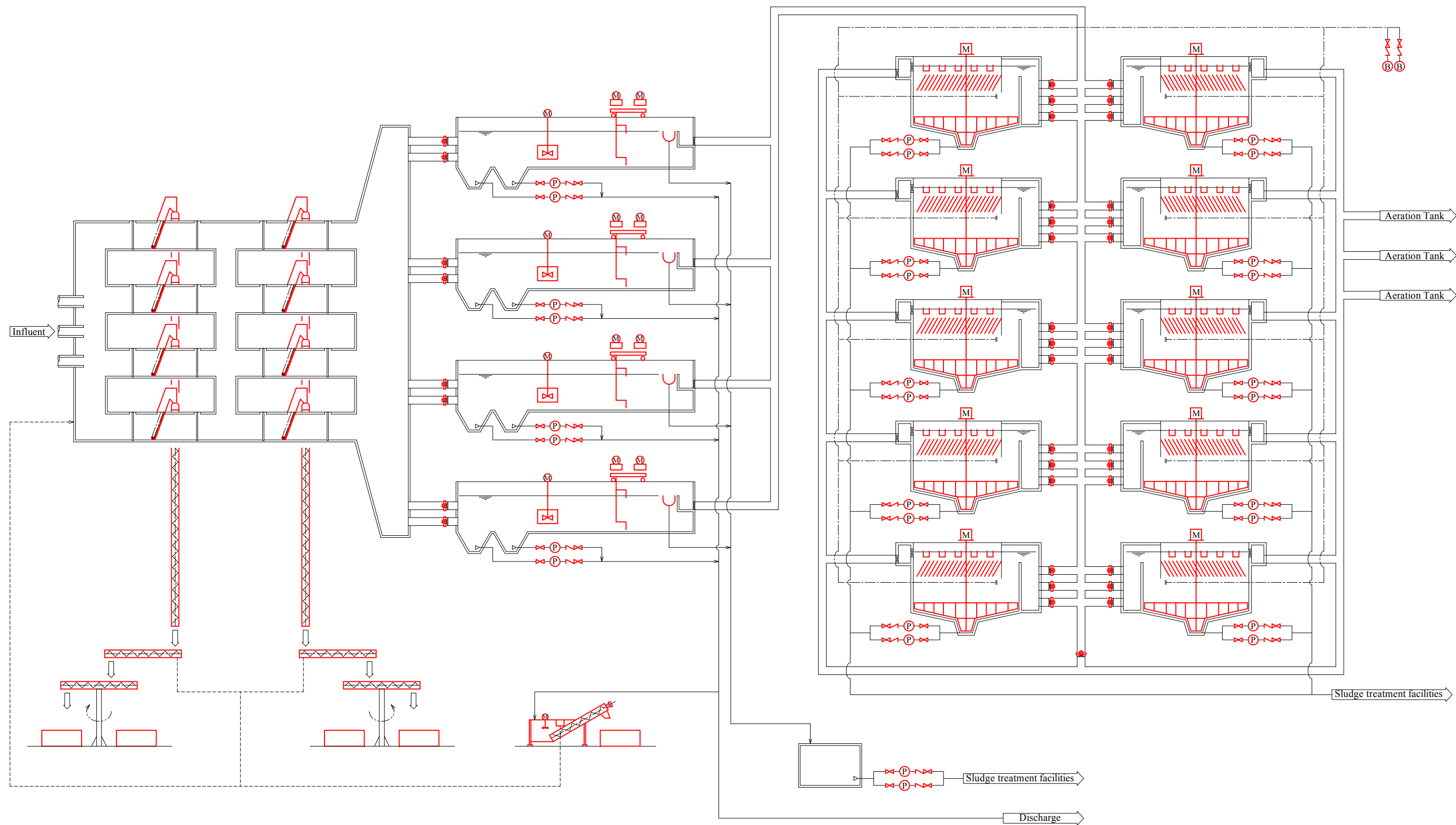


UPPER PLAN SC 1:400

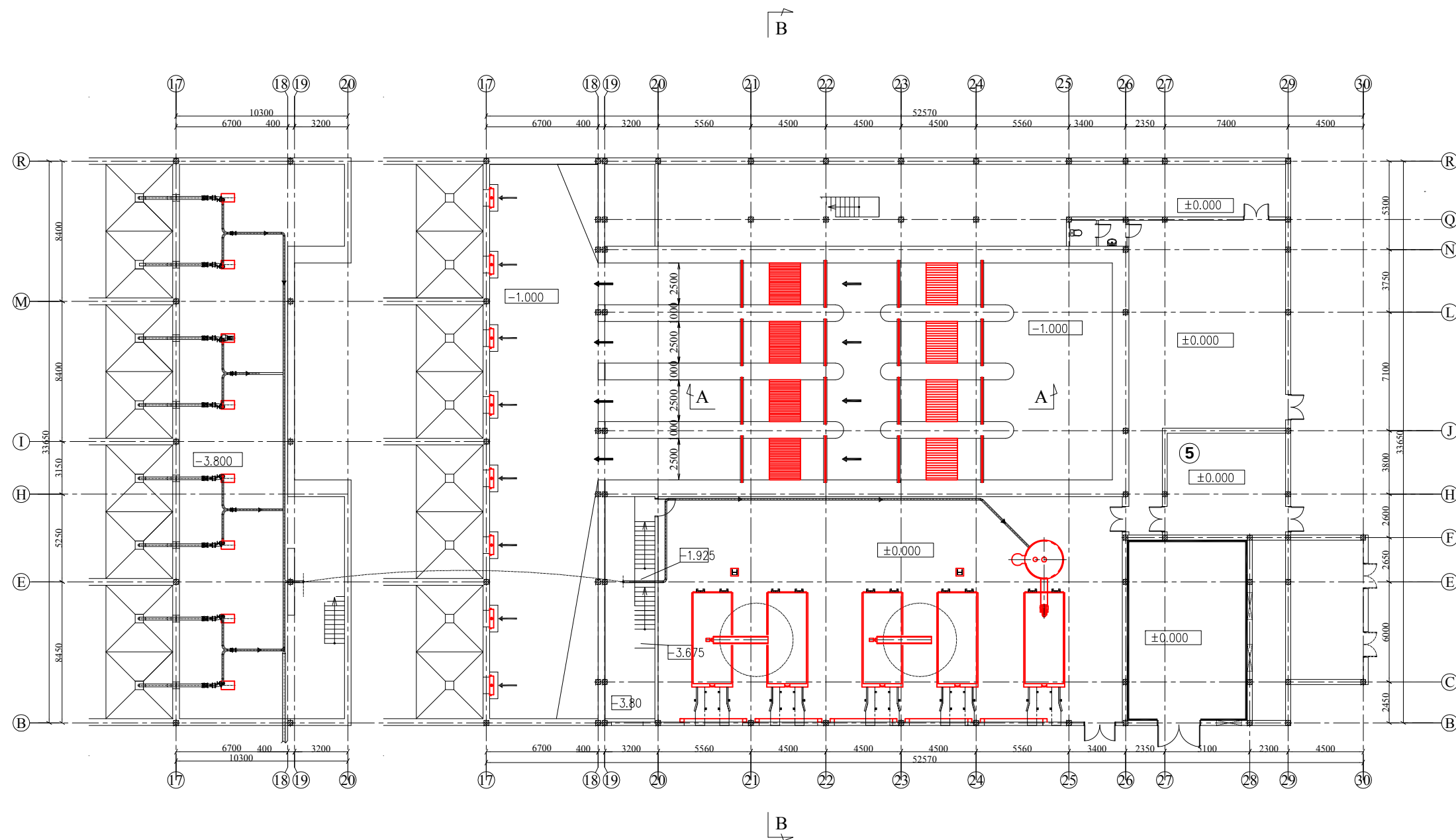


A-A SECTION SC 1:400

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-28
Title: Secondary Settling Tank (Block-2)	Scale: 1:400

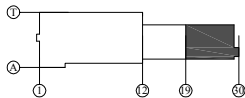


EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-29
Title: Preliminary Treatment and Primary Treatment Process (Block-3)	Scale: NONE

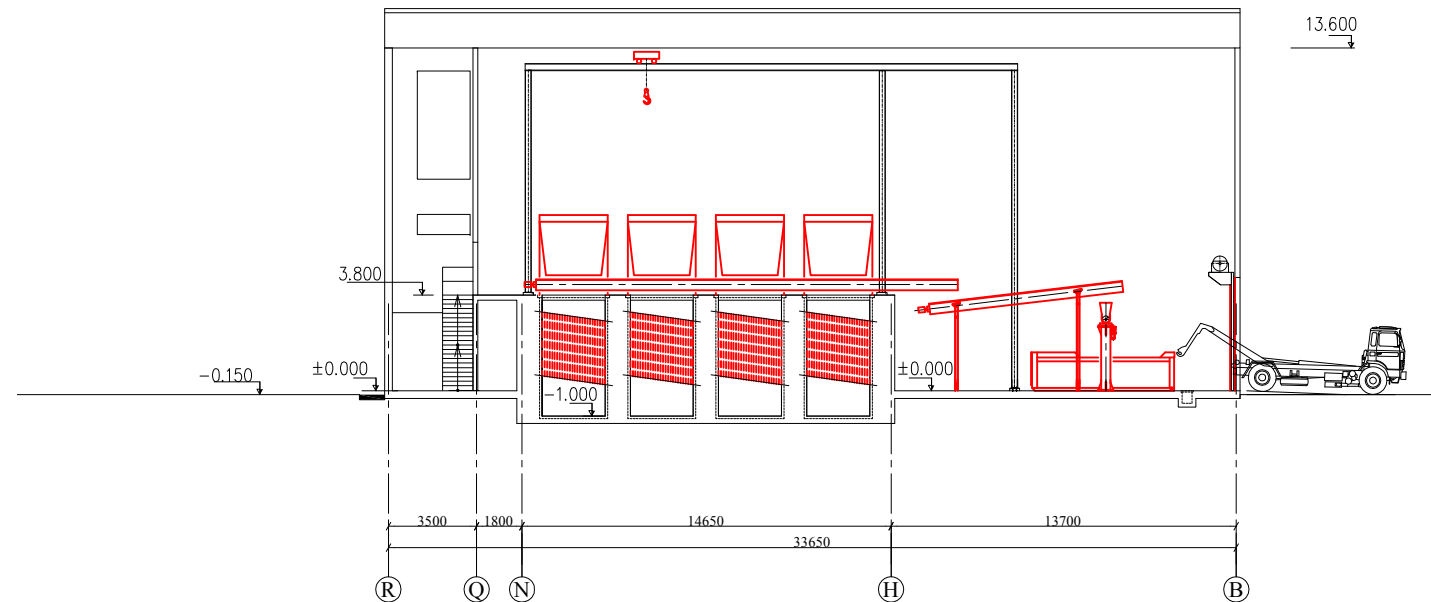


-3.800 FLOOR PLAN SC 1:300

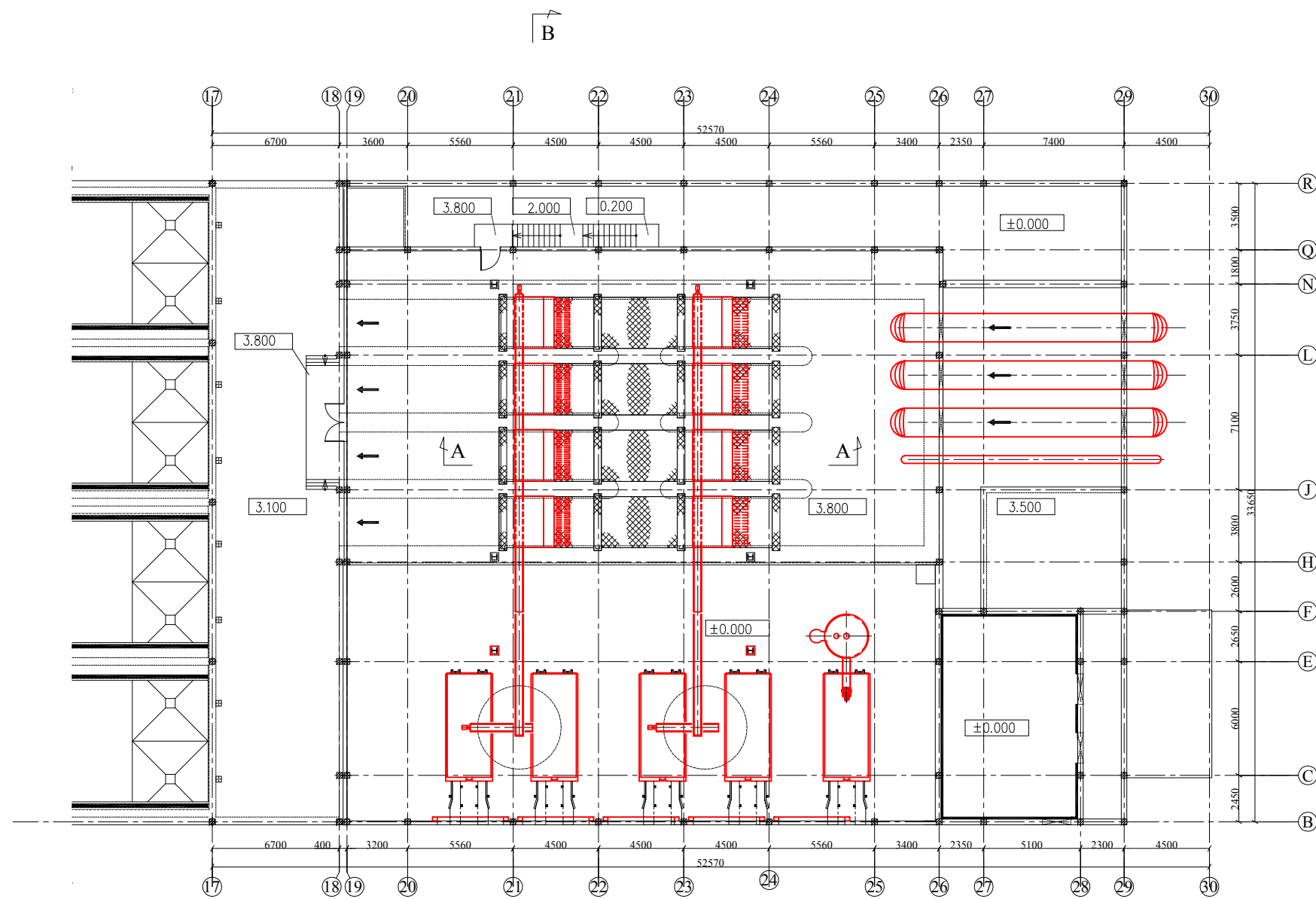
±0.000 FLOOR PLAN SC 1:300



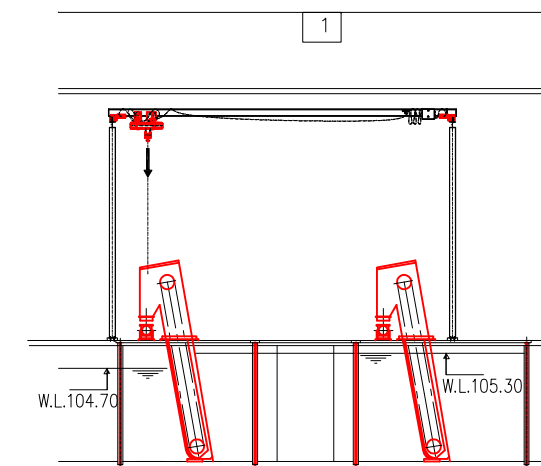
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-30
Title: Preliminary Treatment Facilities (Block-3)	Scale: 1:300



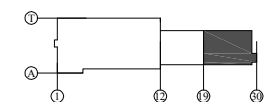
B-B SECTION SC 1:300



+3.800 FLOOR PLAN SC 1:300



A-A SECTION SC 1:300



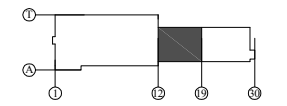
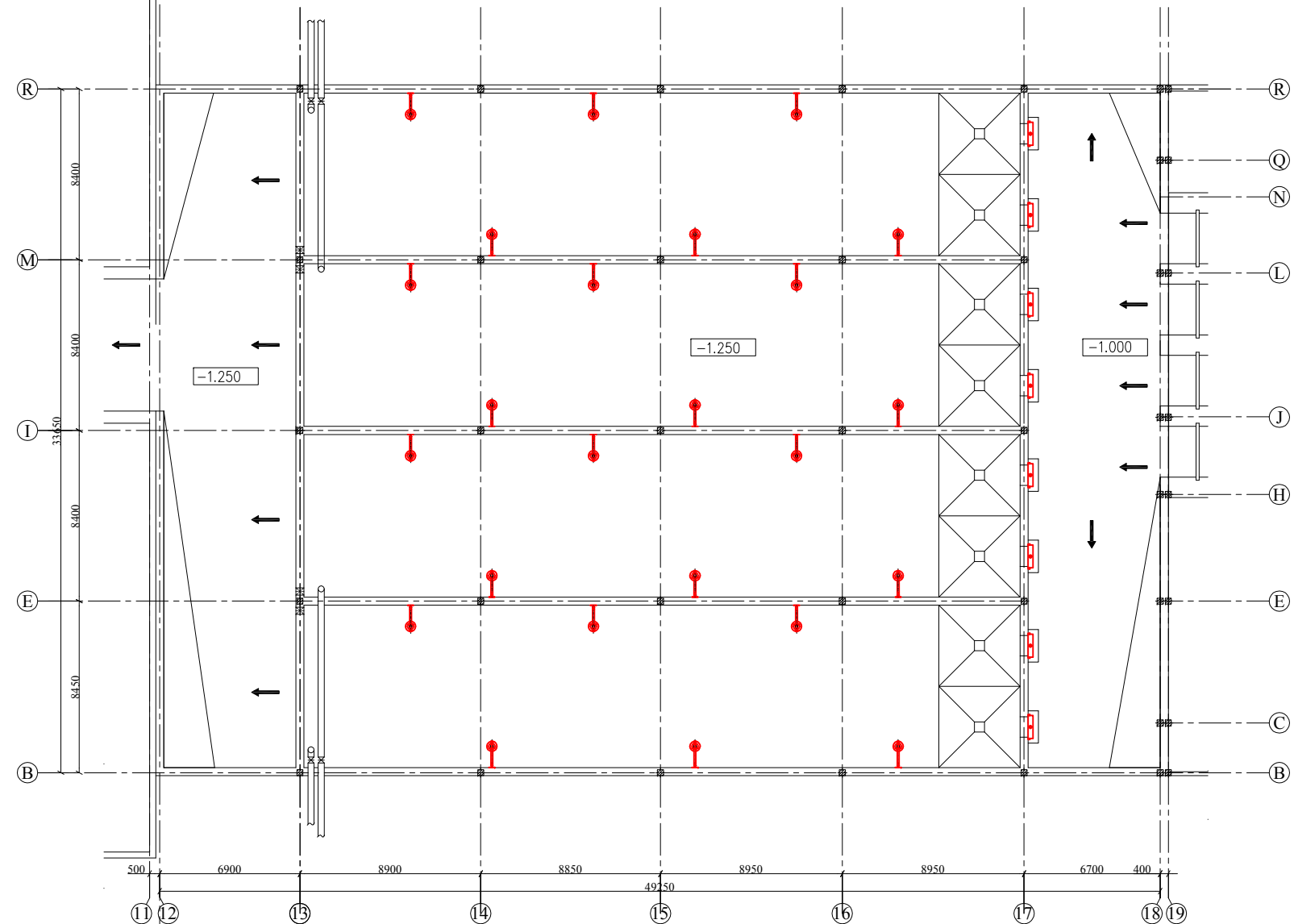
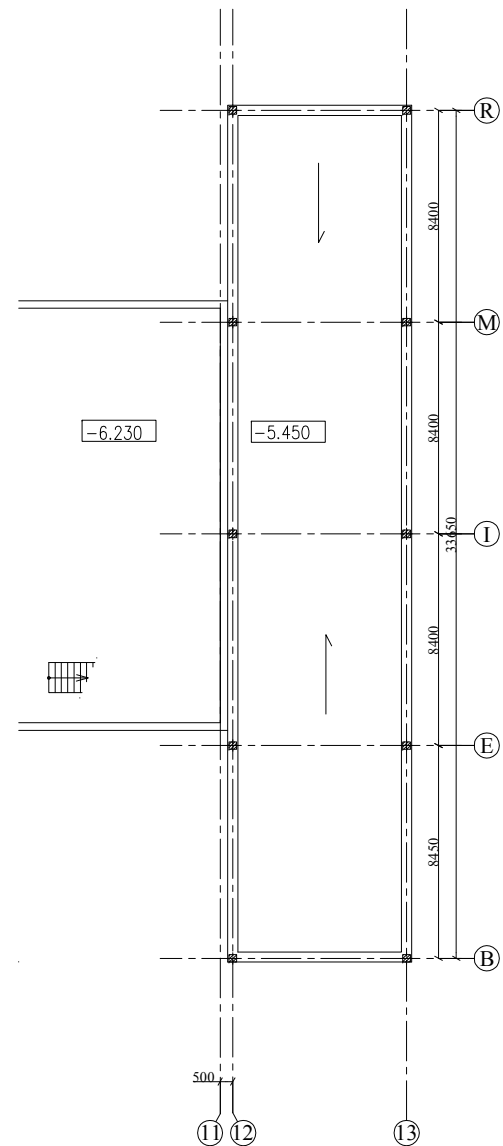
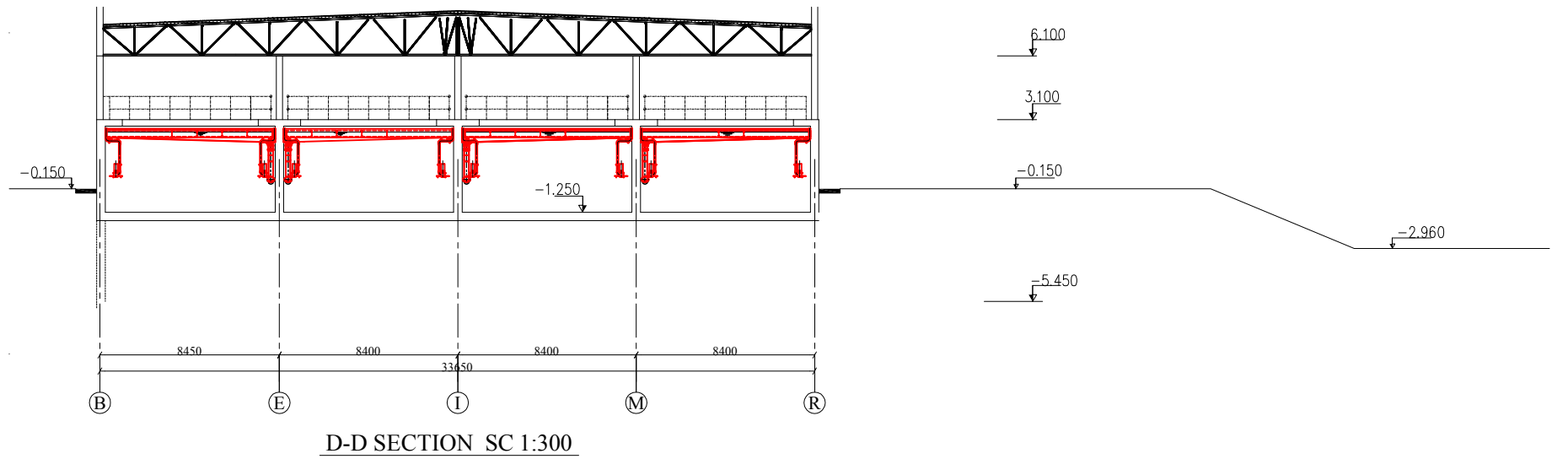
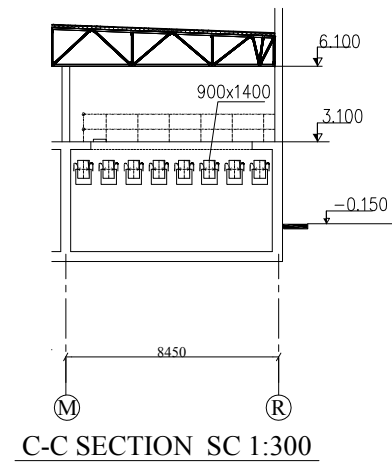
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

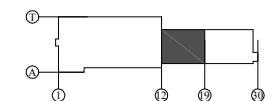
Drw no:
WWTP-31

Title: Preliminary Treatment Facilities (Block-3)

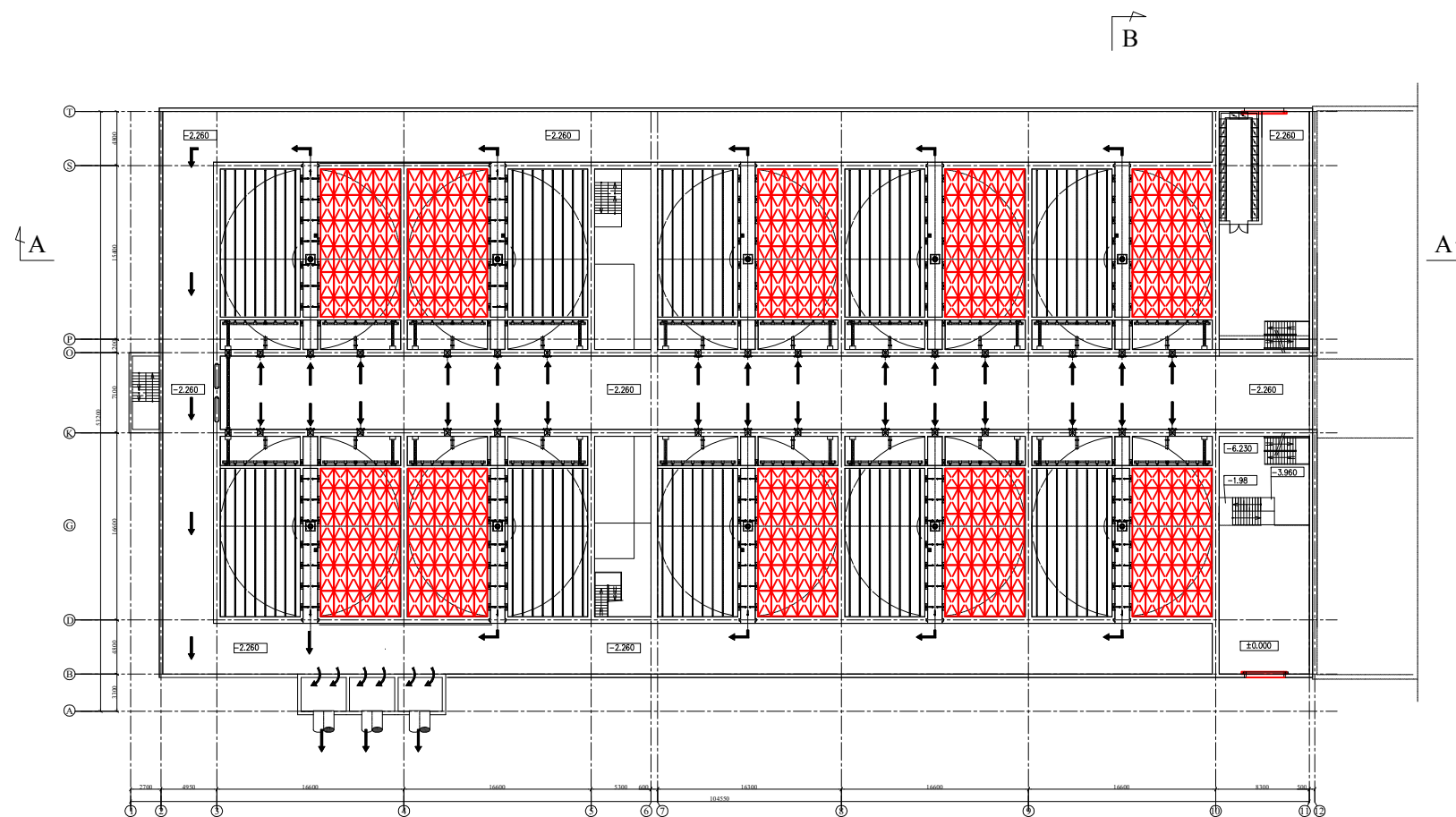
Scale:
1:300



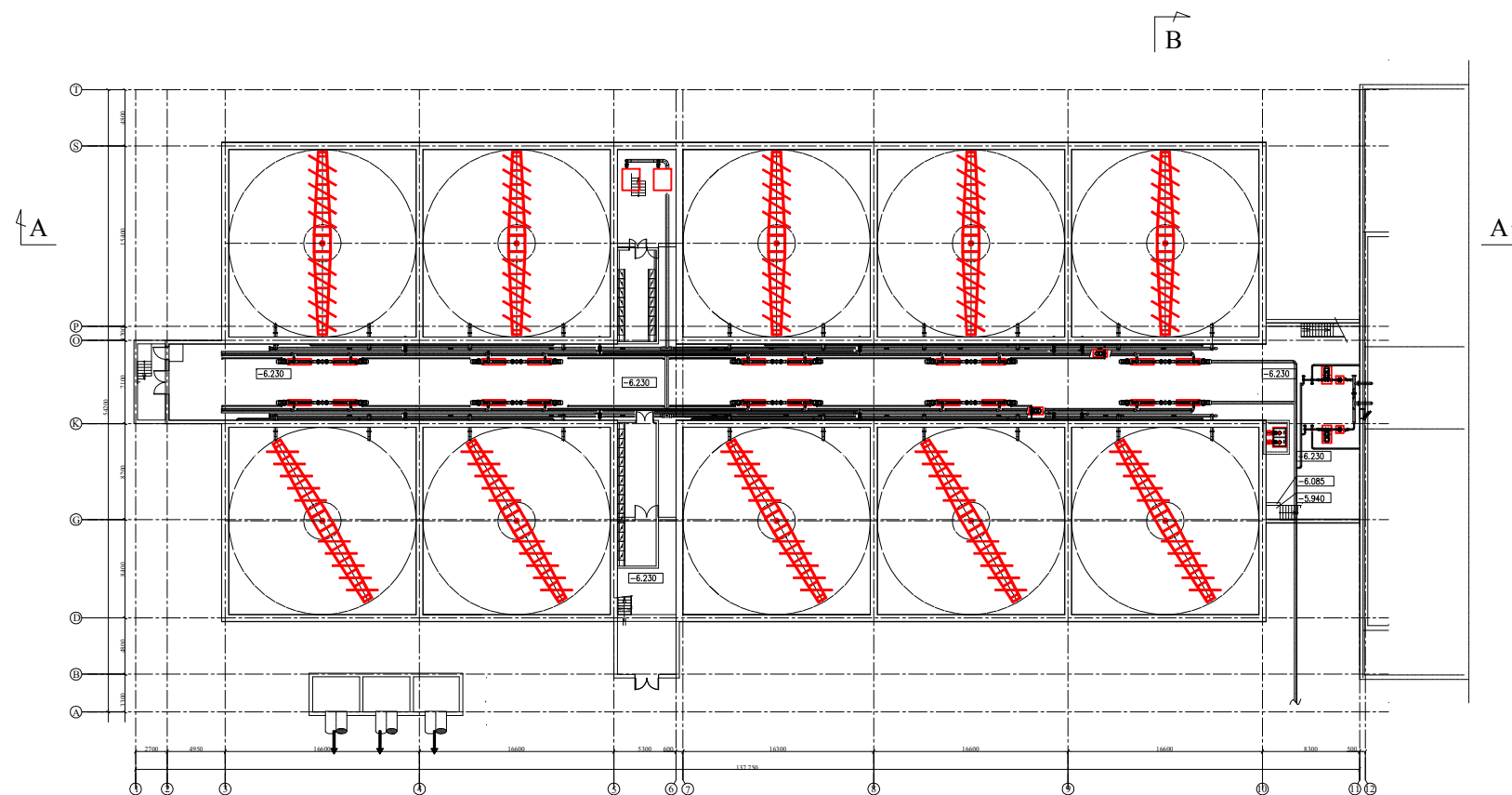
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-32
Title: Preliminary Treatment Facilities (Block-3)	Scale: 1:300



Scale:
1:300

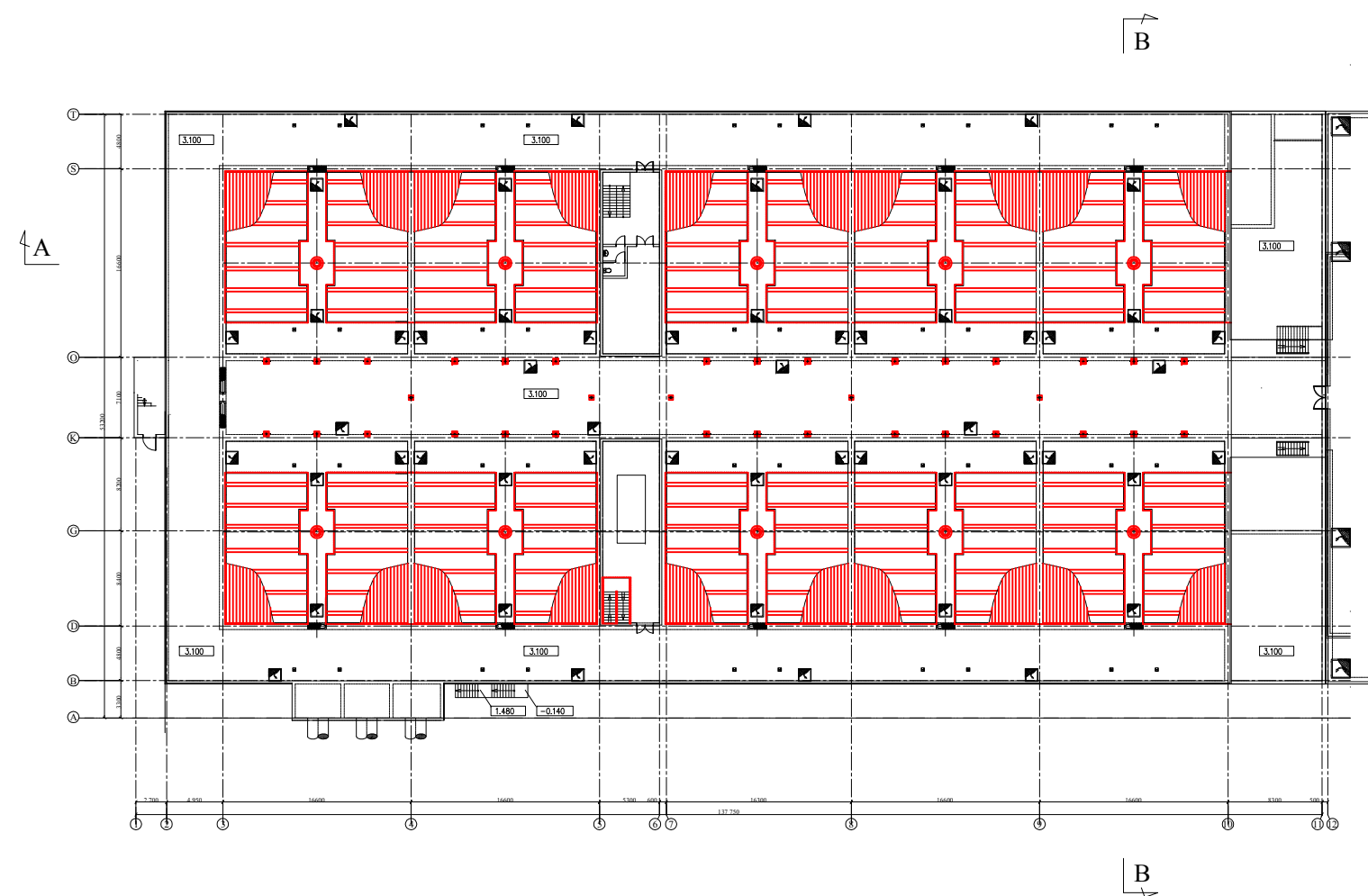
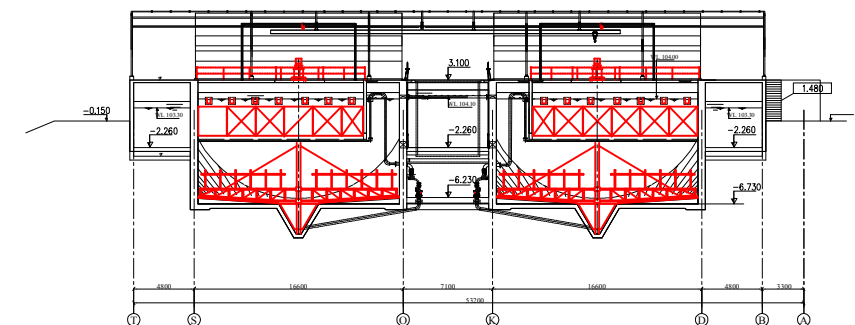
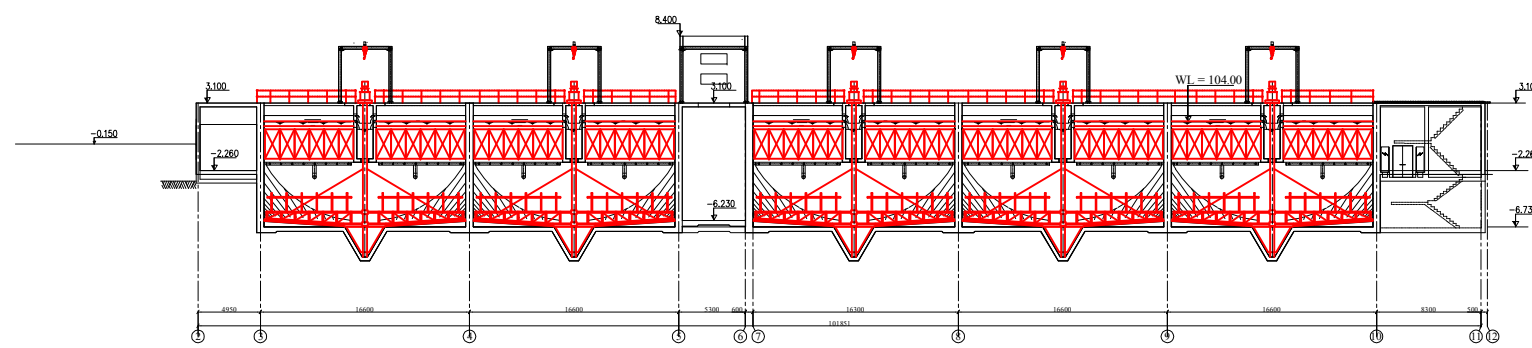


-2.960 FLOOR PLAN SC 1:600



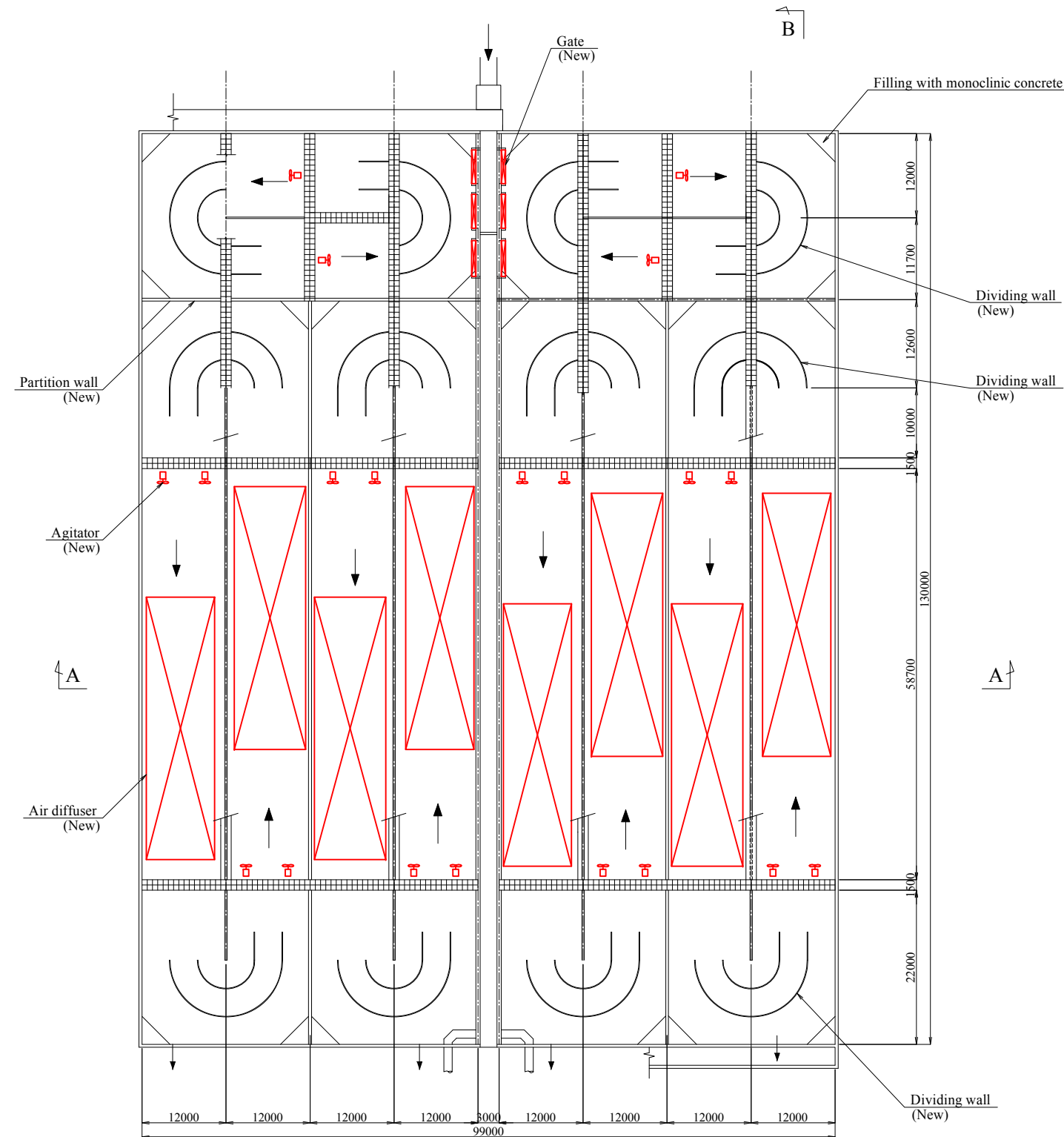
-6.230 FLOOR PLAN SC 1:600

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-34
Title: Primary Treatment Facilities (Block-3)	Scale: 1:600

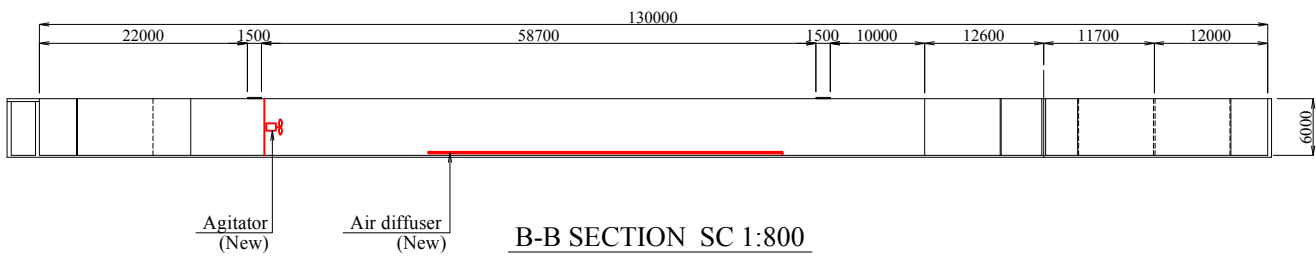


EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-35
Title: Primary Treatment Facilities (Block-3)	Scale: 1:600

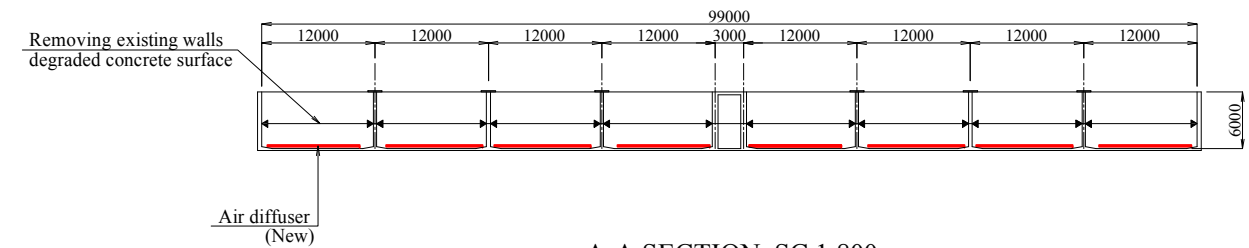
notice: Removing existing walls degraded concrete surface by 10 mm thickness using water jet and to be refilled with mortar by 30 mm thickness



GROUND FLOOR PLAN SC 1:800



B-B SECTION SC 1:800



A-A SECTION SC 1:800

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

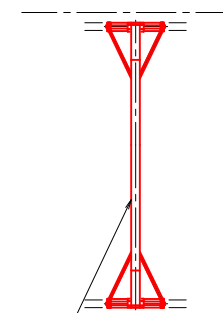
Drw no:
WWTP-36

Title: Aeration Tank (Block-3)

Scale:
1:800



LOWER PLAN SC 1:300



UPPER PLAN SC 1:300

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

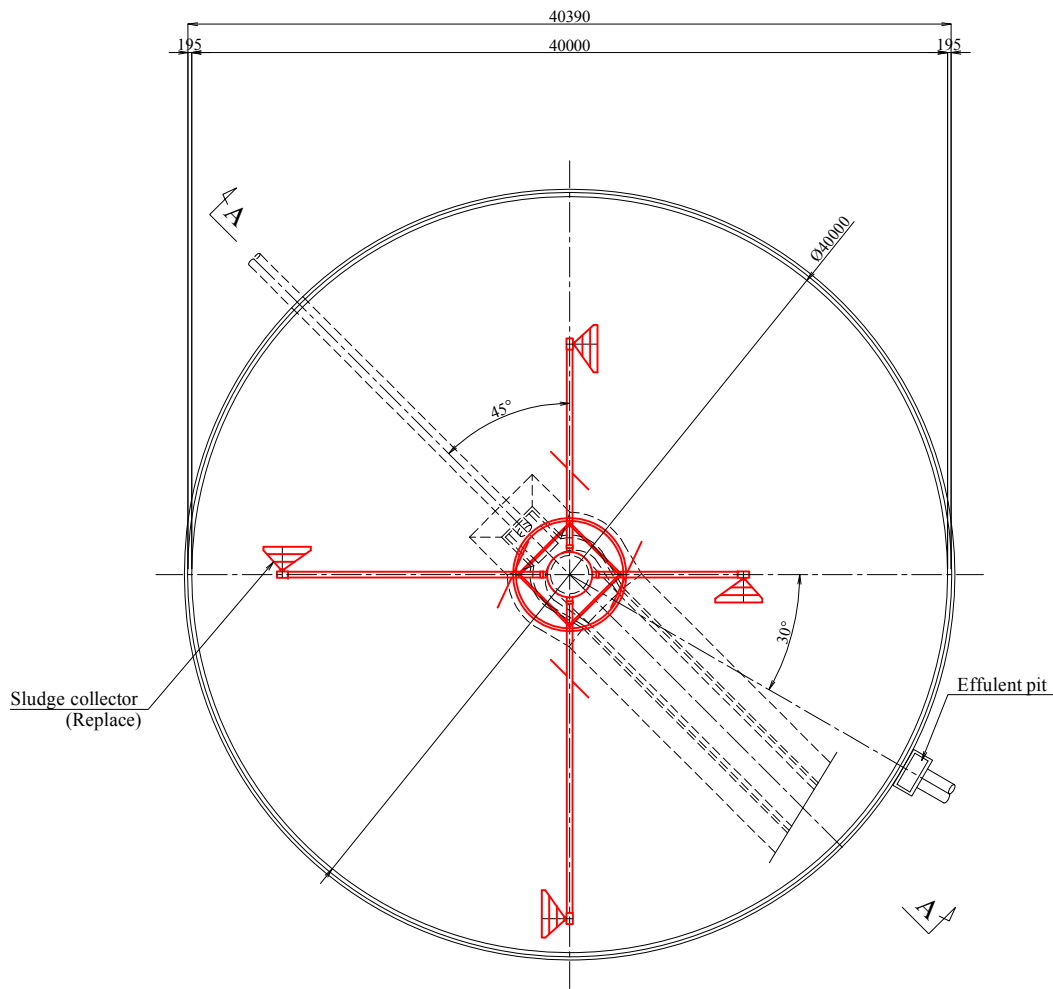
Components: Bortnychy Aeration Station

Drw no:
WWTP-37

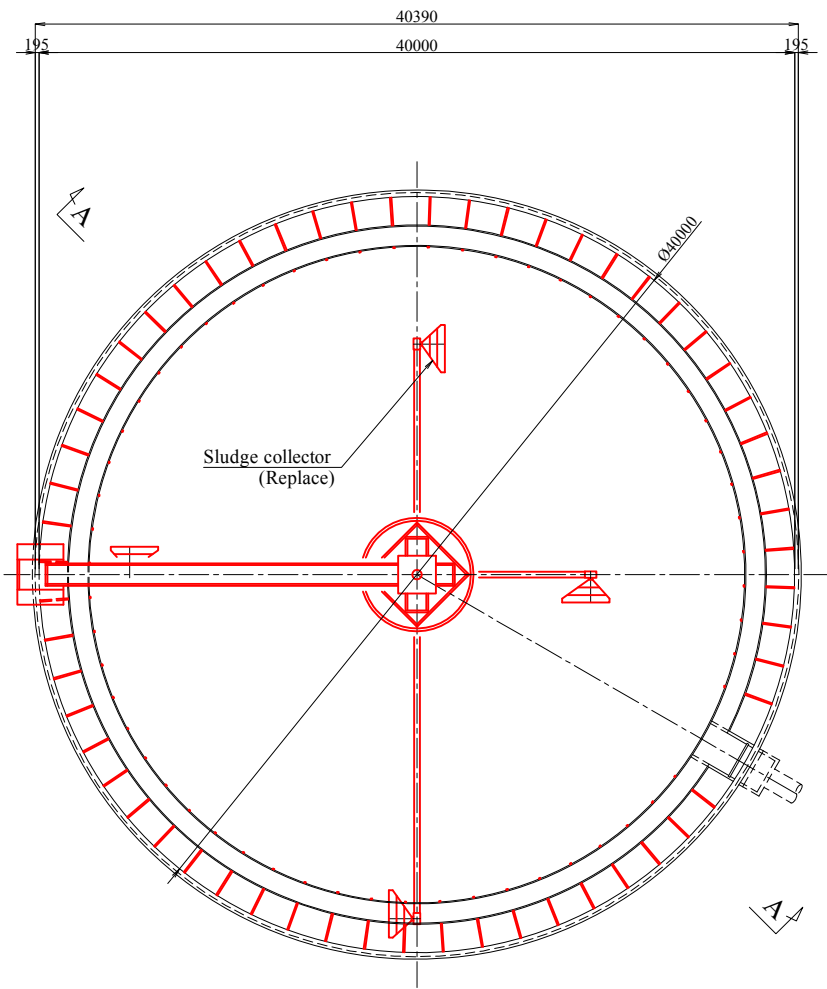
Title: Blower Building (Block-3)

Scale:
1:300

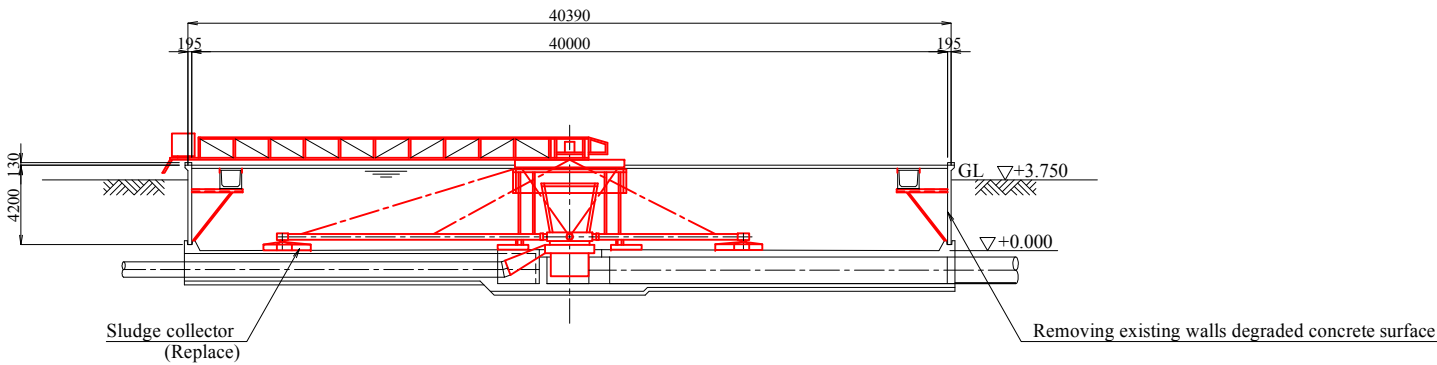
notice: Removing existing walls degraded concrete surface by 10 mm thickness using water jet and to be refilled with mortar by 20 mm thickness



LOWER PLAN SC 1:400

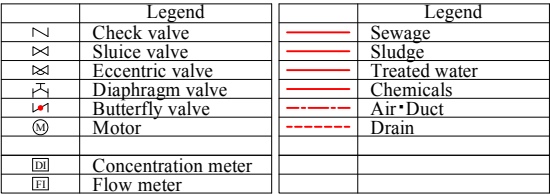


UPPER PLAN SC 1:400

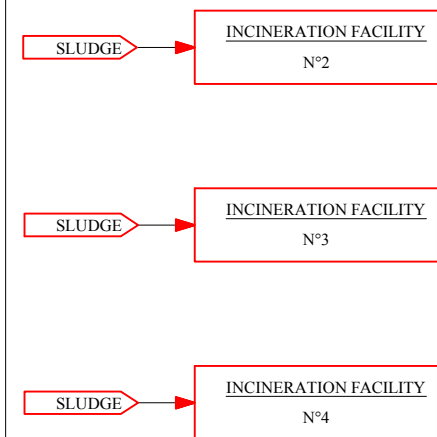
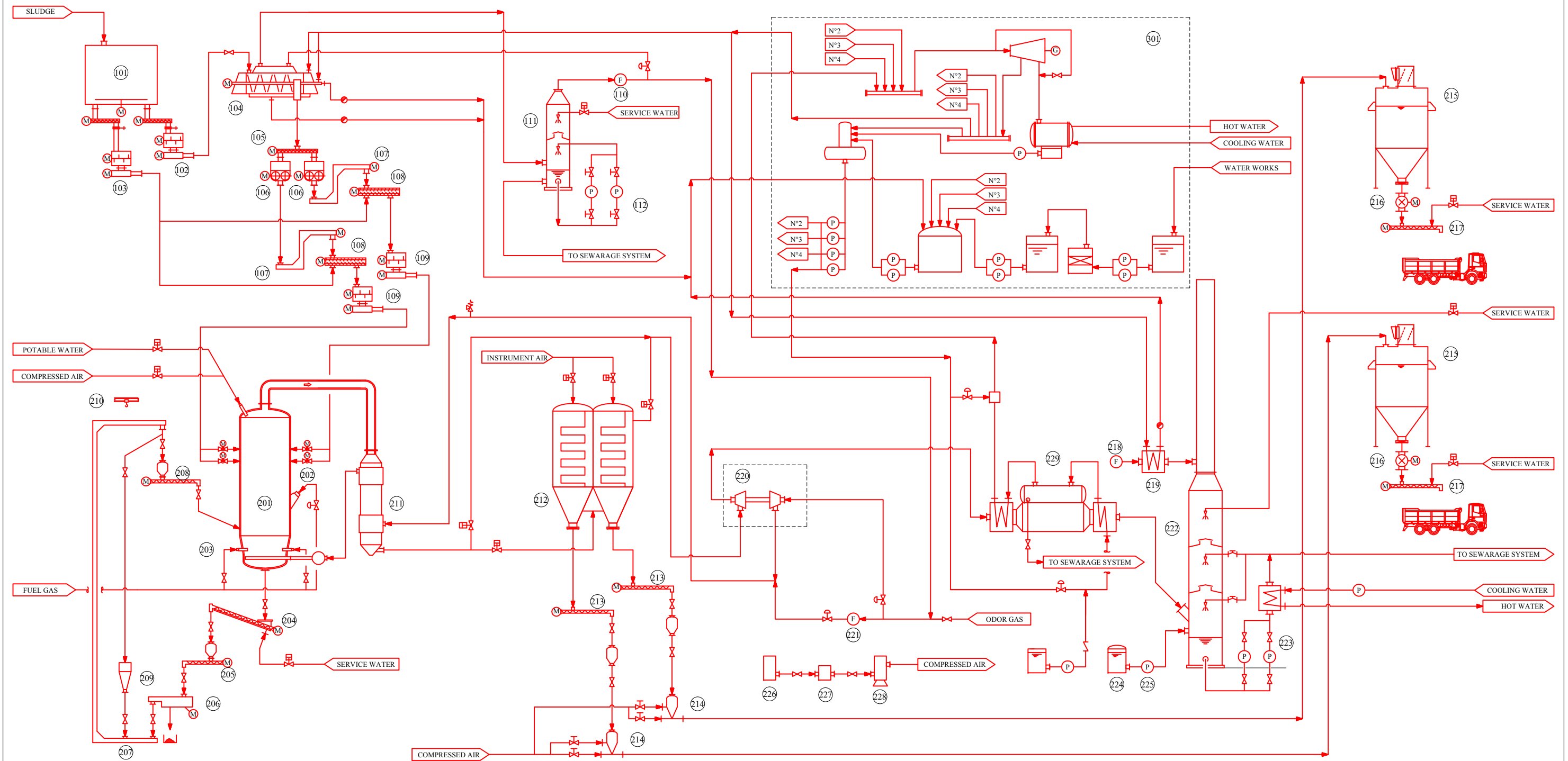


A-A SECTION SC 1:400

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-38
Title: Secondary Settling Tank (Block-3)	Scale: 1:400

[illegible]

Scale: NONE



No.	Item	kW	nos
101	Slideg receiving hopper	14.7	1
102	Dryer sludge feed pump	16.5	1
103	Dewatered sludge feed pump	41	1
104	Dryer	74	1
105	Dried sludge conveyors	5.5	1
106	Dried sludge hopper	2.2	2
107	Dried sludge transfer conveyor	1.5	2
108	Mixed sludge conveyor	22	2
109	Incinerator mixed sludge feed pump	48	2
110	Dryer circulation fan	15	1
111	Dryer scrubber	-	1
112	Dryer scrubber circulation pump	15	1

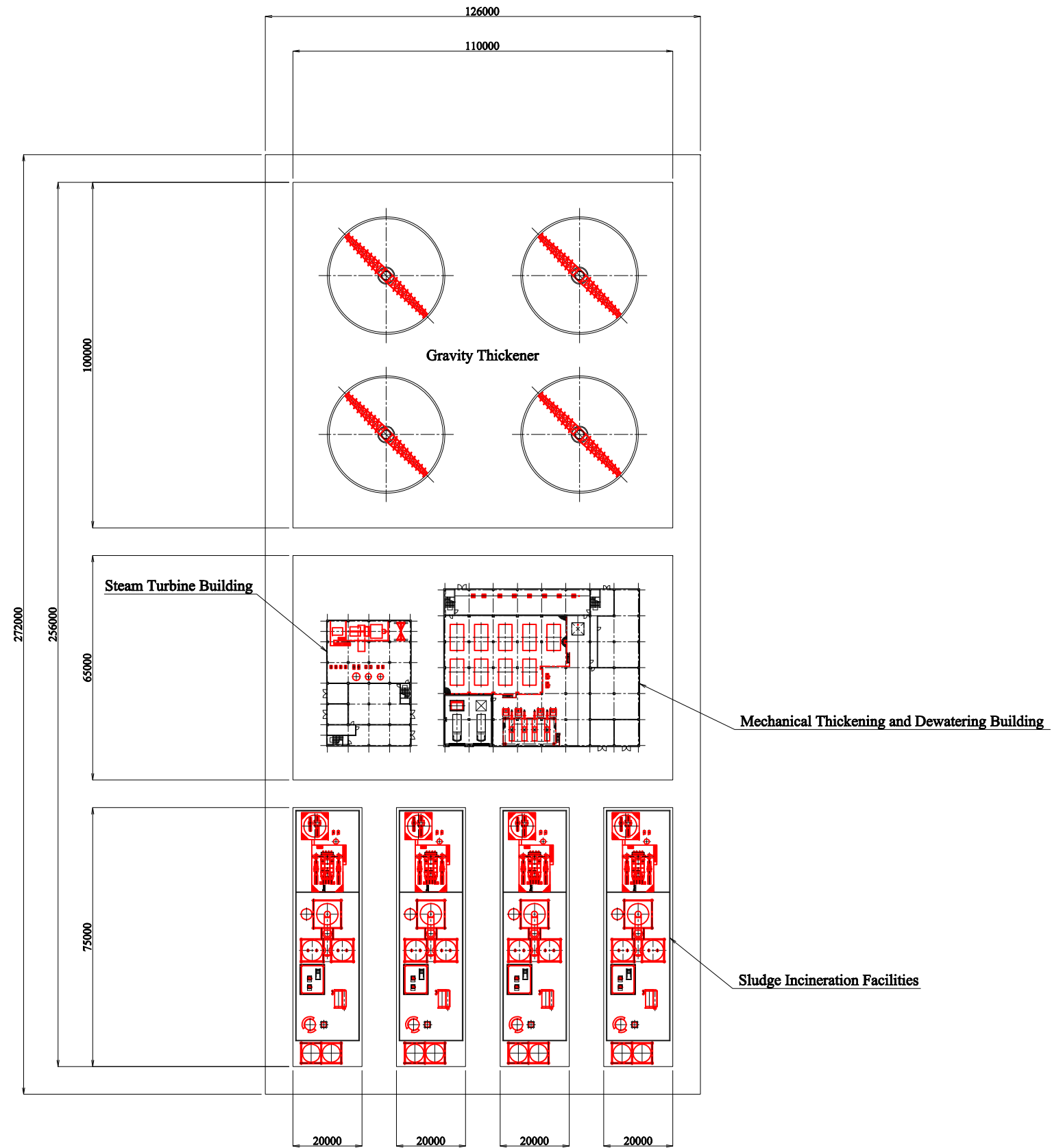
No.	Item	kW	nos
201	Furnace	-	1
202	Start up burner	-	2
203	Fuel gun	-	1
204	Sand discharge conveyor	5.5	1
205	Sand temporary storage tank	1.5	1
206	Sand screen	1.7	1
207	Sand transfer conveyor	1.5	1
208	Sand temporary storage tank 2	2.25	1
209	Sand hopper	7.4	1
210	Maintenance hoist	2.2	1
211	Air preheater	-	1
212	Bag filter	2.2	1
213	Ash discharge tank	1.5	2
214	Ash transporter	-	2
215	Ash hopper	-	2
216	Ash discharge valve	1.5	2
217	Ash humidifier	11	2
218	Plume prevention air fan	55	1
219	Plume prevention air heater	-	1
220	Turbo-charger unit	7.4	1

No.	Item	kW	nos
221	Start-up fan	370	1
222	Desulfurizer	-	1
223	Desulfurizer circulation pump	37	1
224	Caustic soda tank	-	1
225	Caustic soda pump	0.4	1
226	Air compressor	10.0	1
227	Air dryer	3.75	1
228	Air receiver	-	2
229	Waste heat boiler unit	-	1

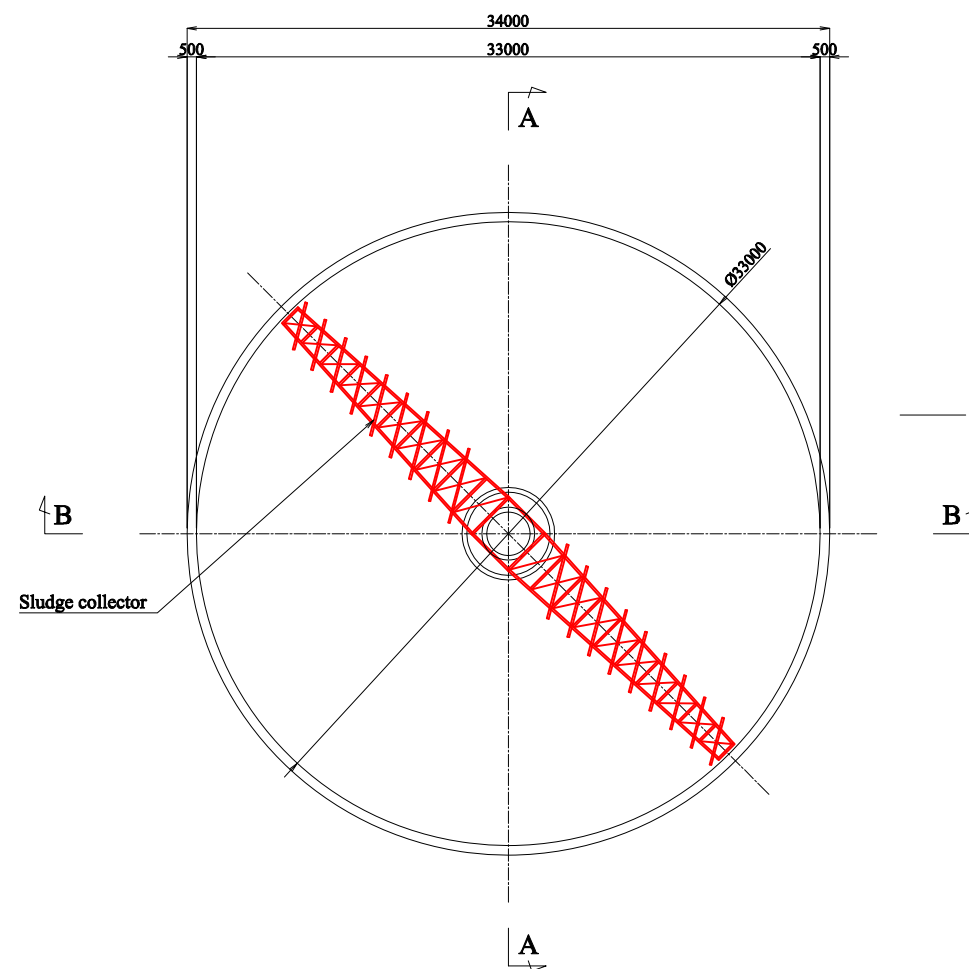
Common Facility			
No.	Item	kW	nos
301	Steam turbin generator system	172 (TOTAL)	1

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

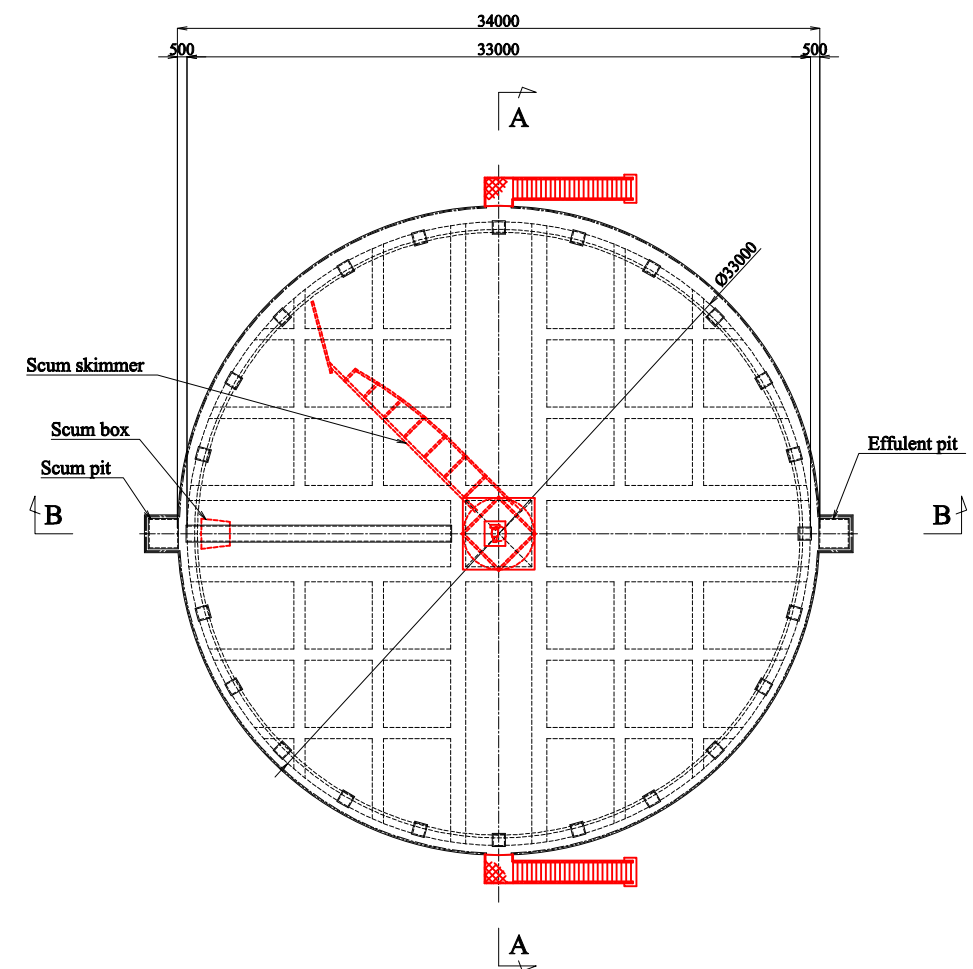
Components: Bortnychy Aeration Station	Drw no: WWTP-40
Title: Sludge Incineration Process	Scale: NONE



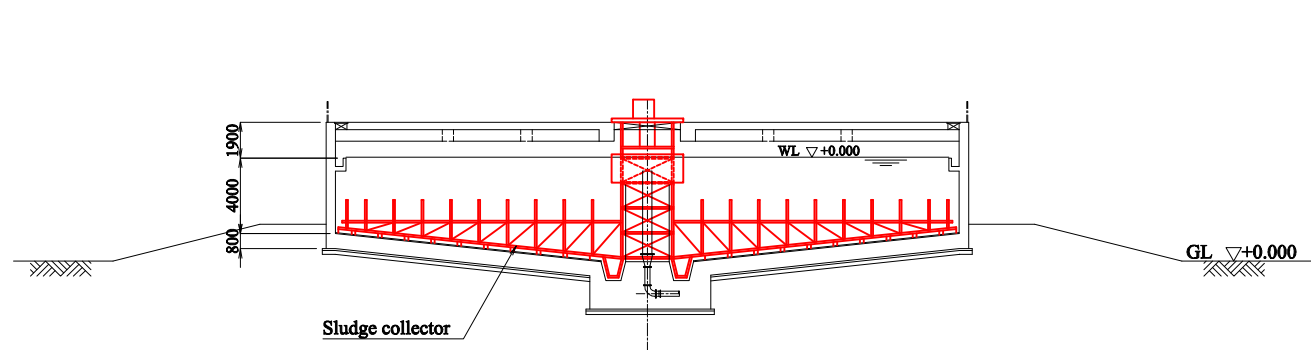
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-41
Title: General Layout of Sludge Treatment Facilities	Scale: 1:1500



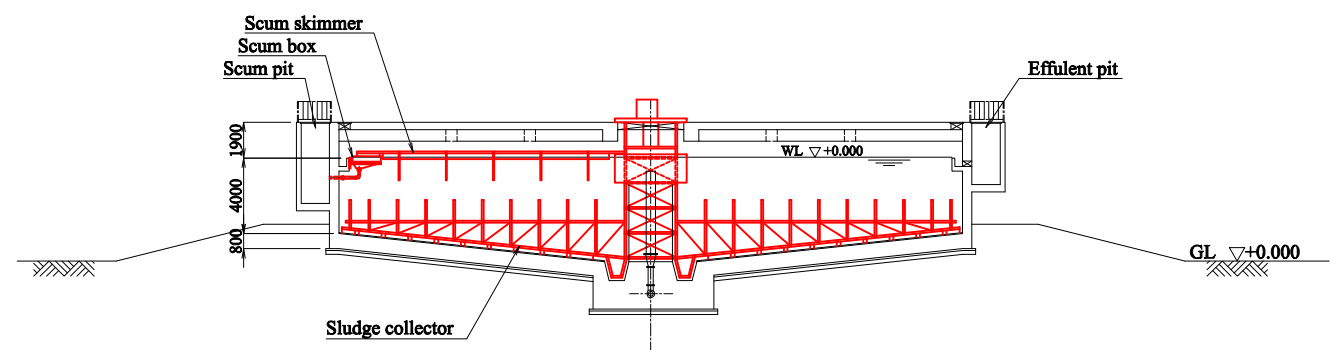
LOWER PLAN SC 1:400



UPPER PLAN SC 1:400



A-A SECTION SC 1:400



B-B SECTION SC 1:400

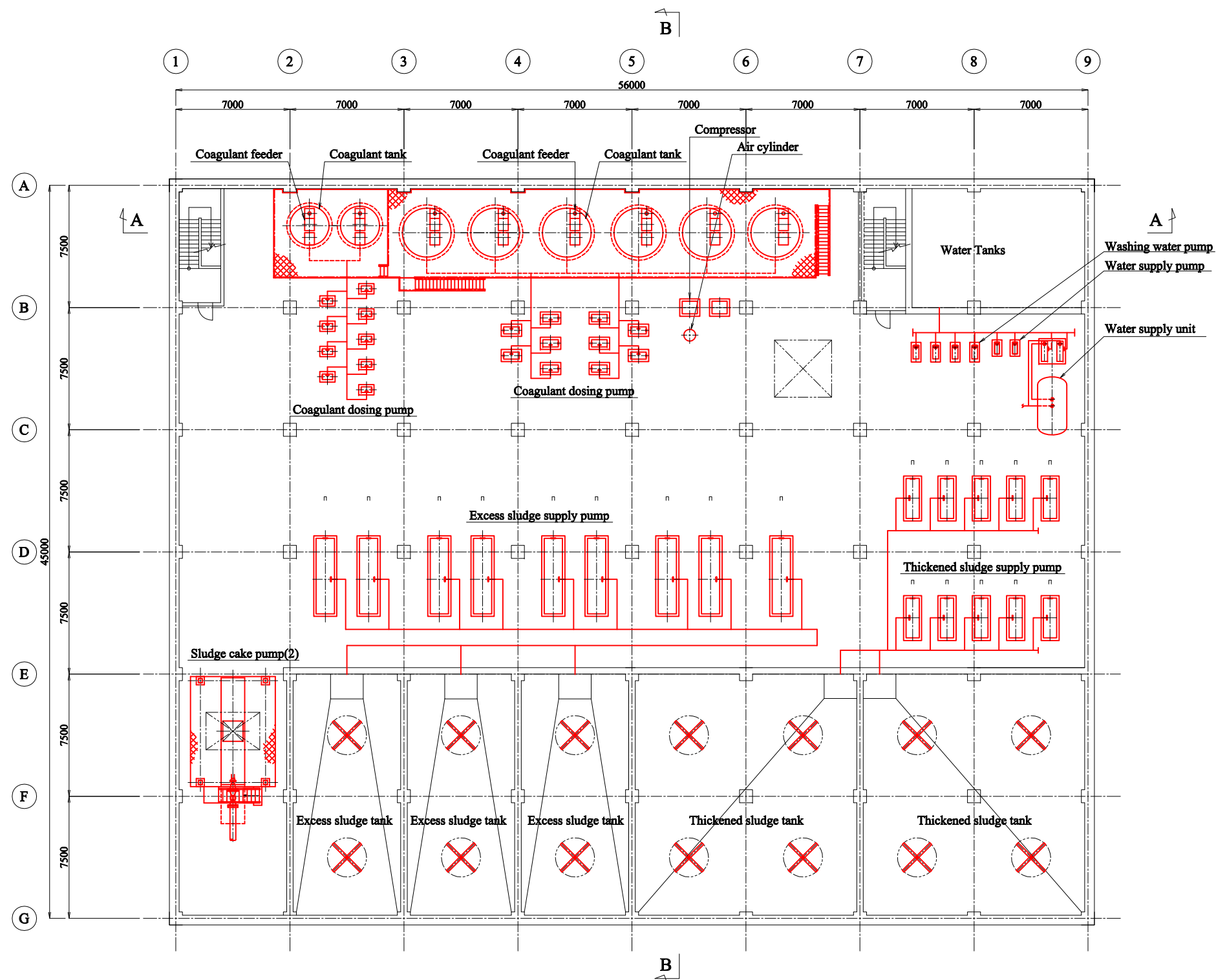
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

Drw no:
WWTP-42

Title: Gravity Thickener

Scale:
1:400



B1 FLOOR PLAN SC 1:300

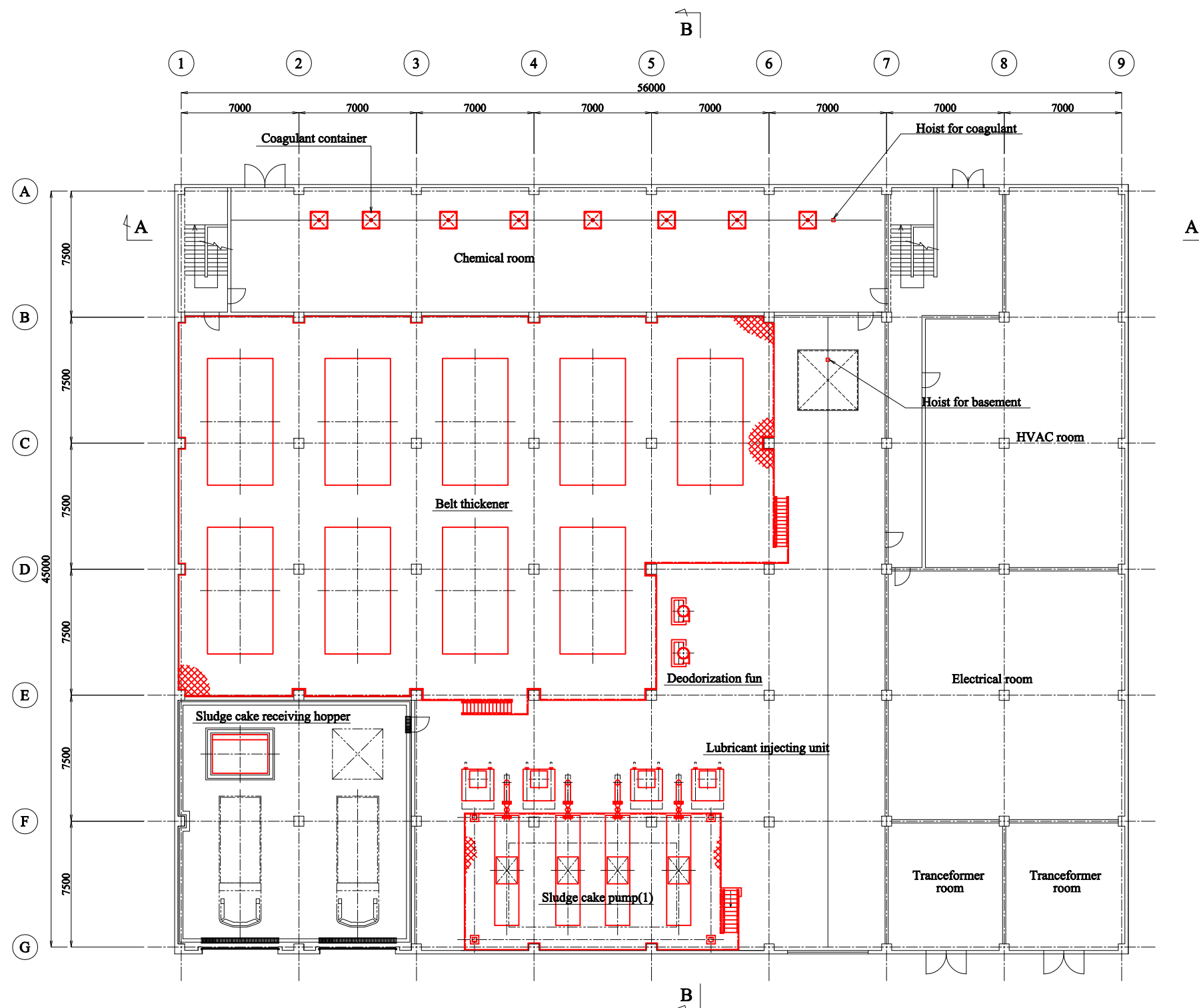
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

Drw no:
WWTP-43

Title: Mechanical Thickening and Dewatering Building

Scale:
1:300



GROUND FLOOR PLAN SC 1:300

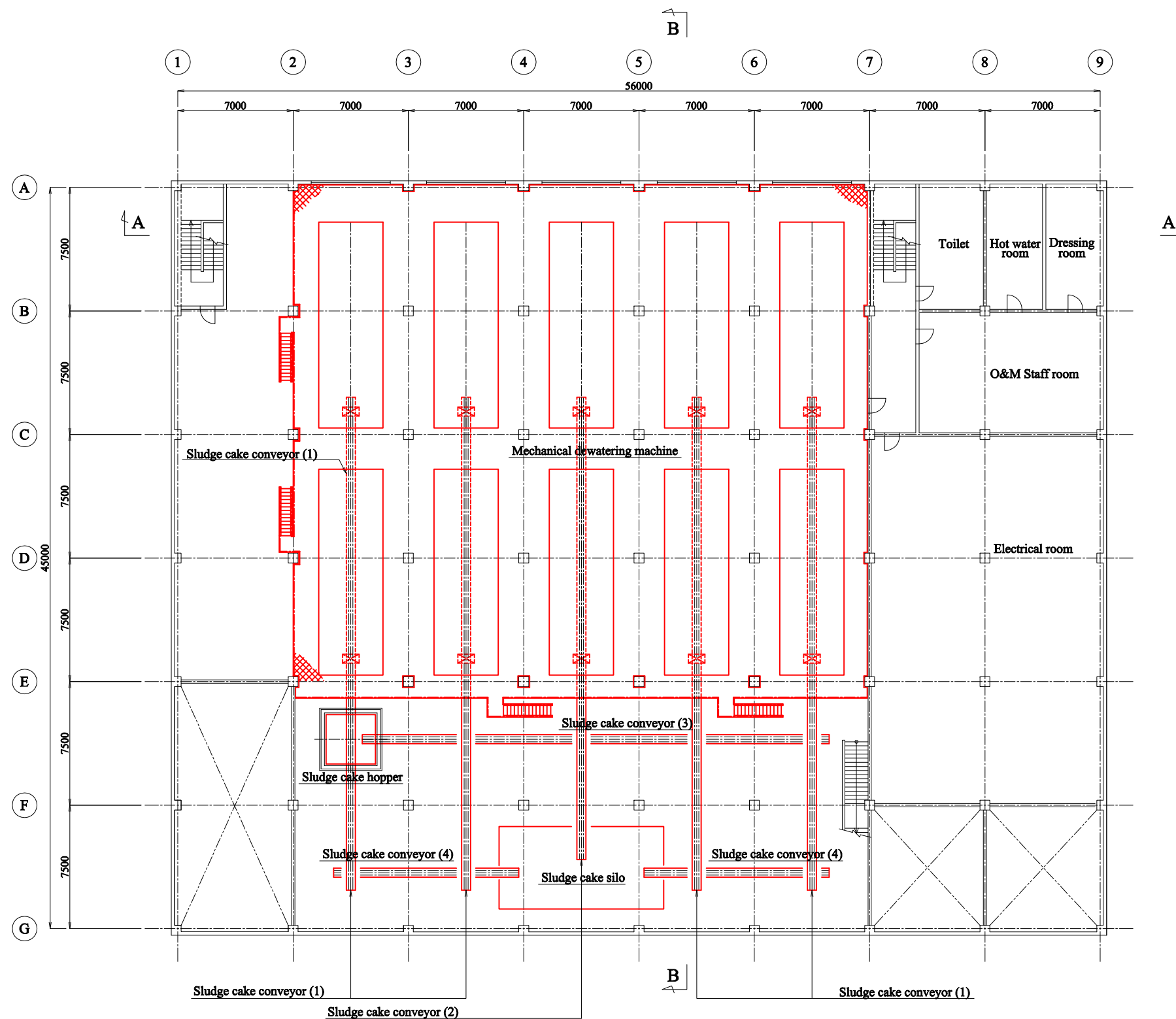
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

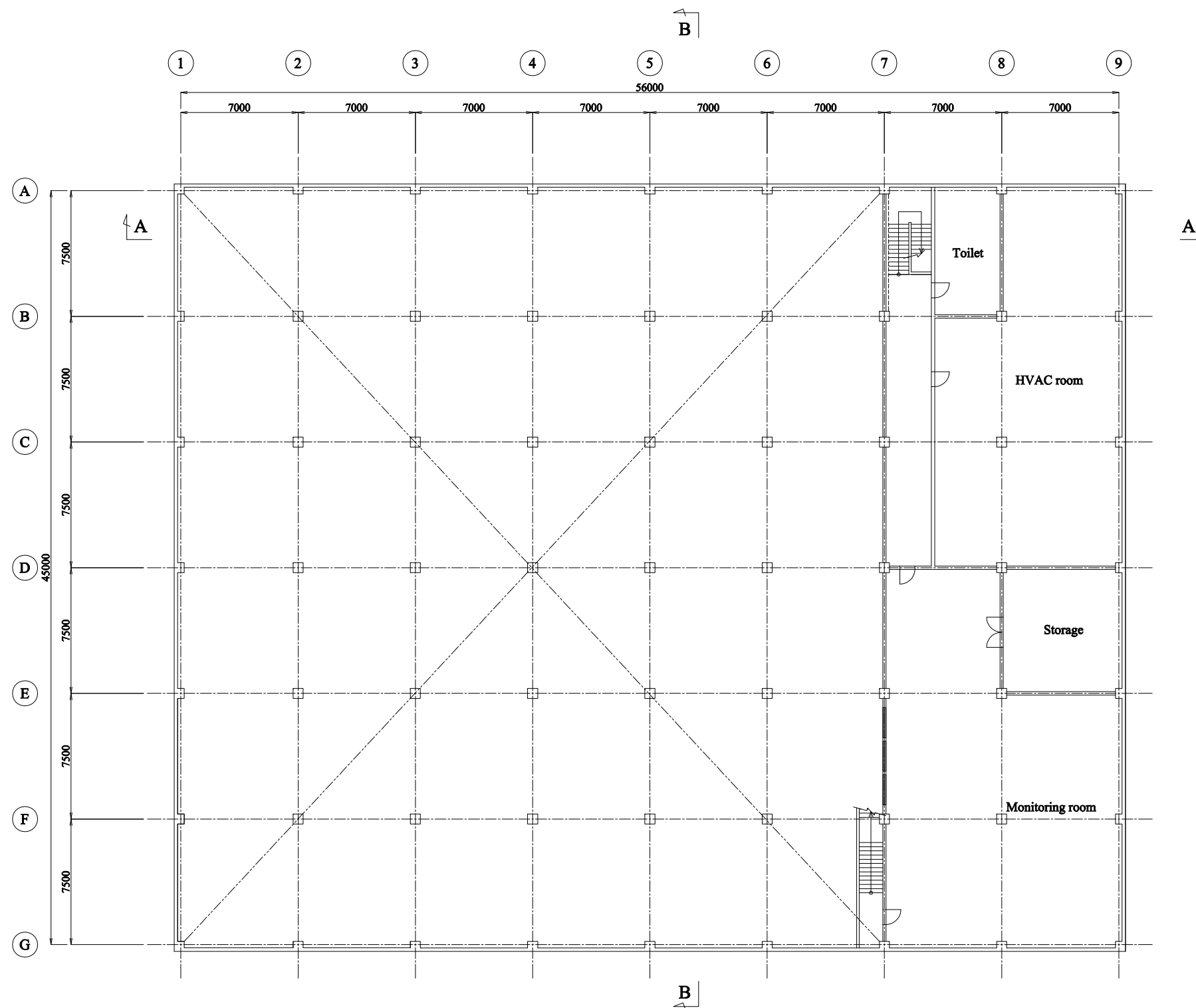
Drw no:
WWTP-44

Title: Mechanical Thickening and Dewatering Building

Scale:
1:300

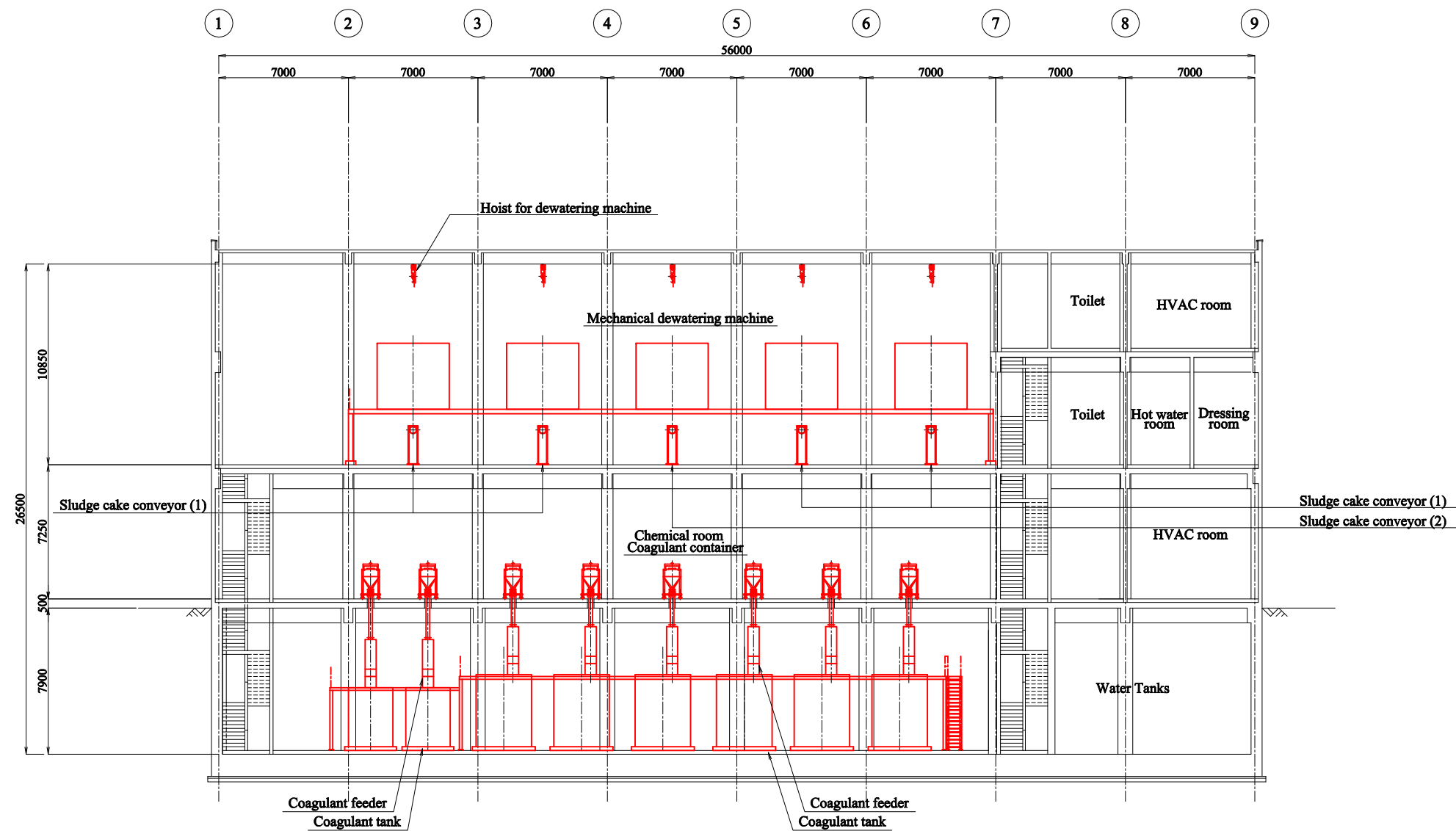


EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-45
Title: Mechanical Thickening and Dewatering Building	Scale: 1:300



3 FLOOR PLAN SC 1:300

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-46
Title: Mechanical Thickening and Dewatering Building	Scale: 1:300



A-A SECTION SC 1:300

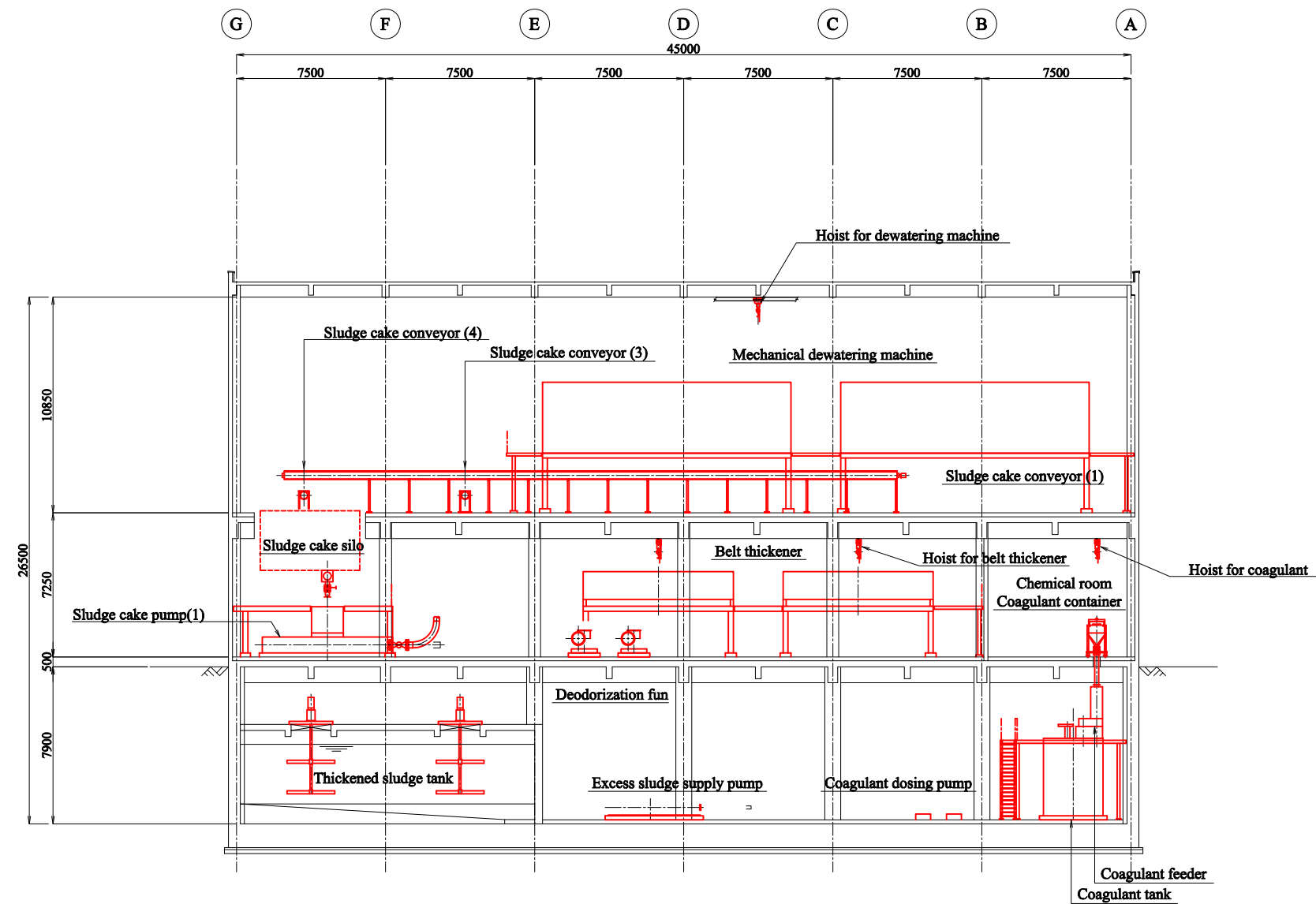
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

Drw no:
WWTP-47

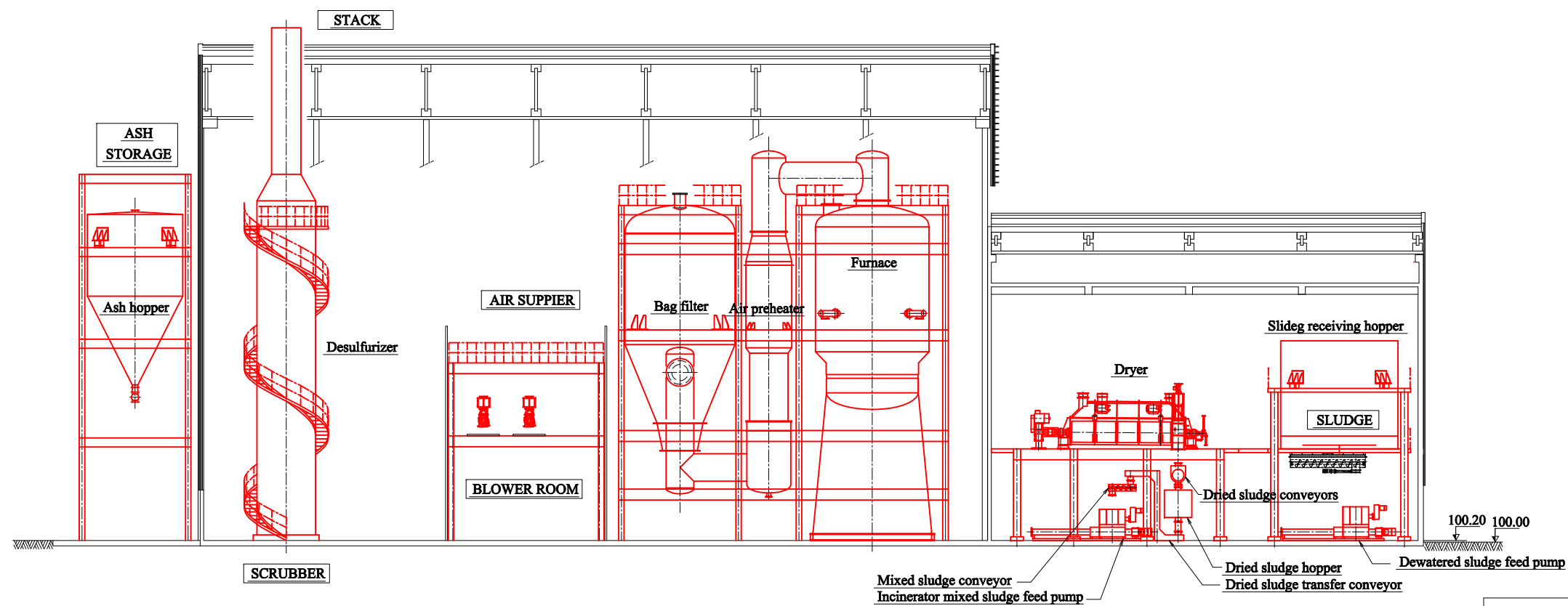
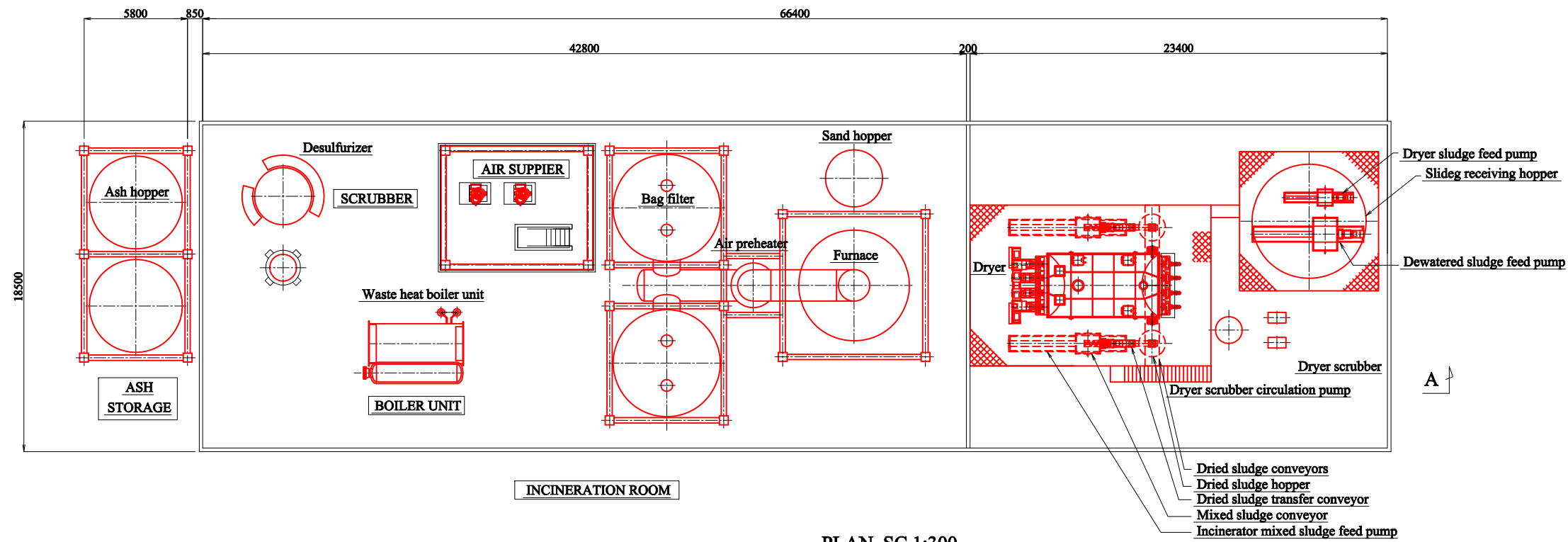
Title: Mechanical Thickening and Dewatering Building

Scale:
1:300

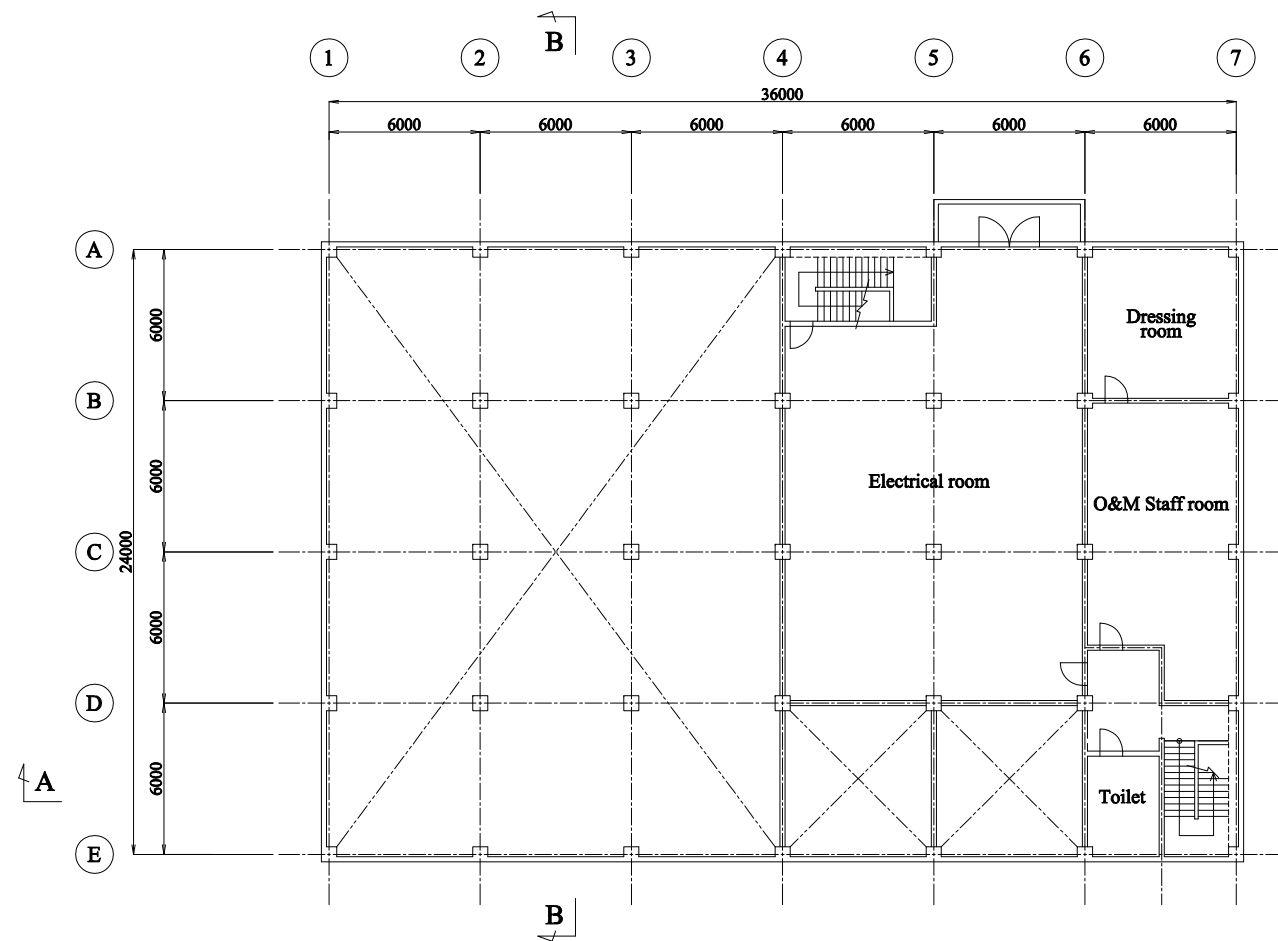


B-B SECTION SC 1:300

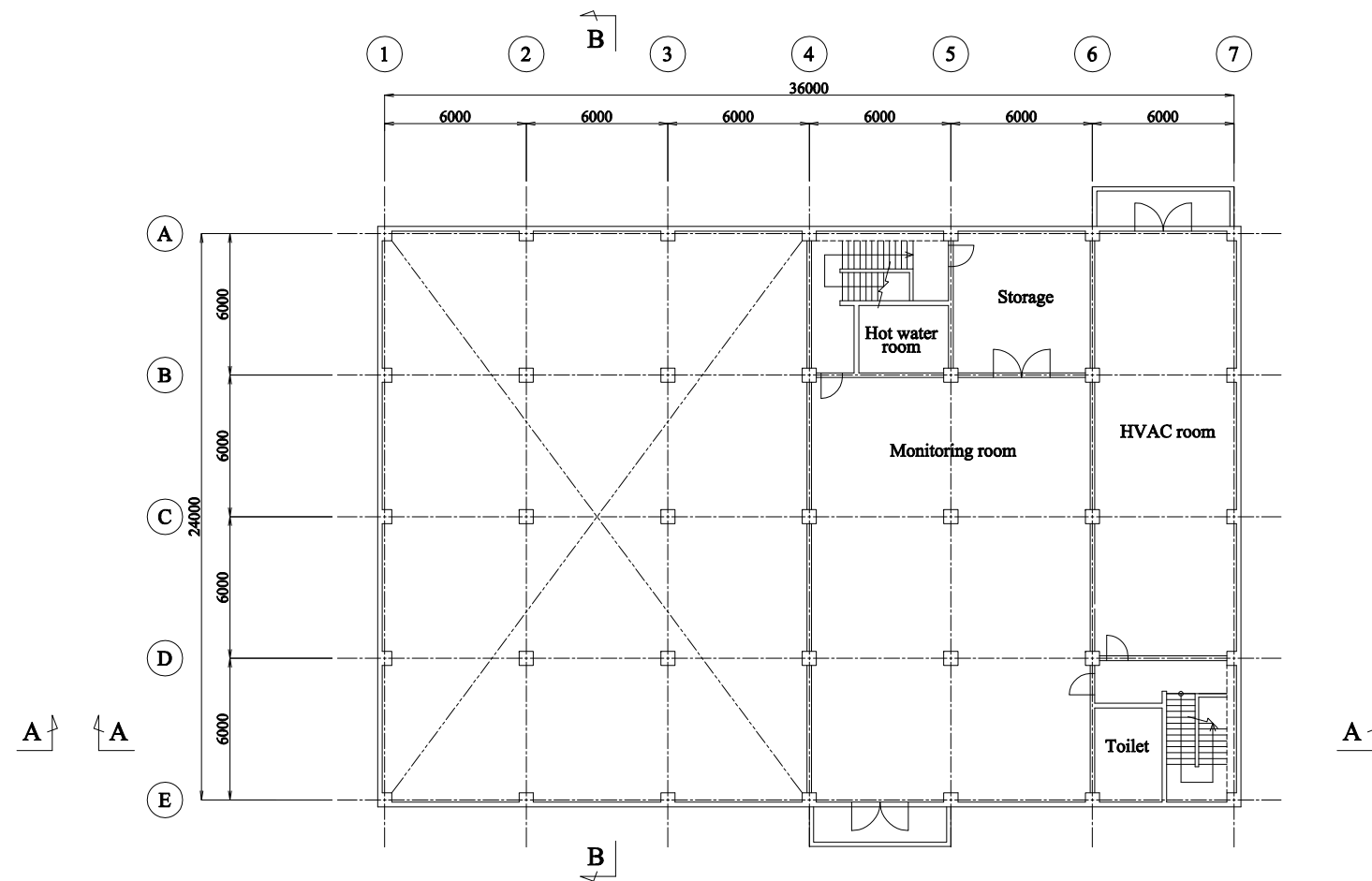
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-48
Title: Mechanical Thickening and Dewatering Building	Scale: 1:300



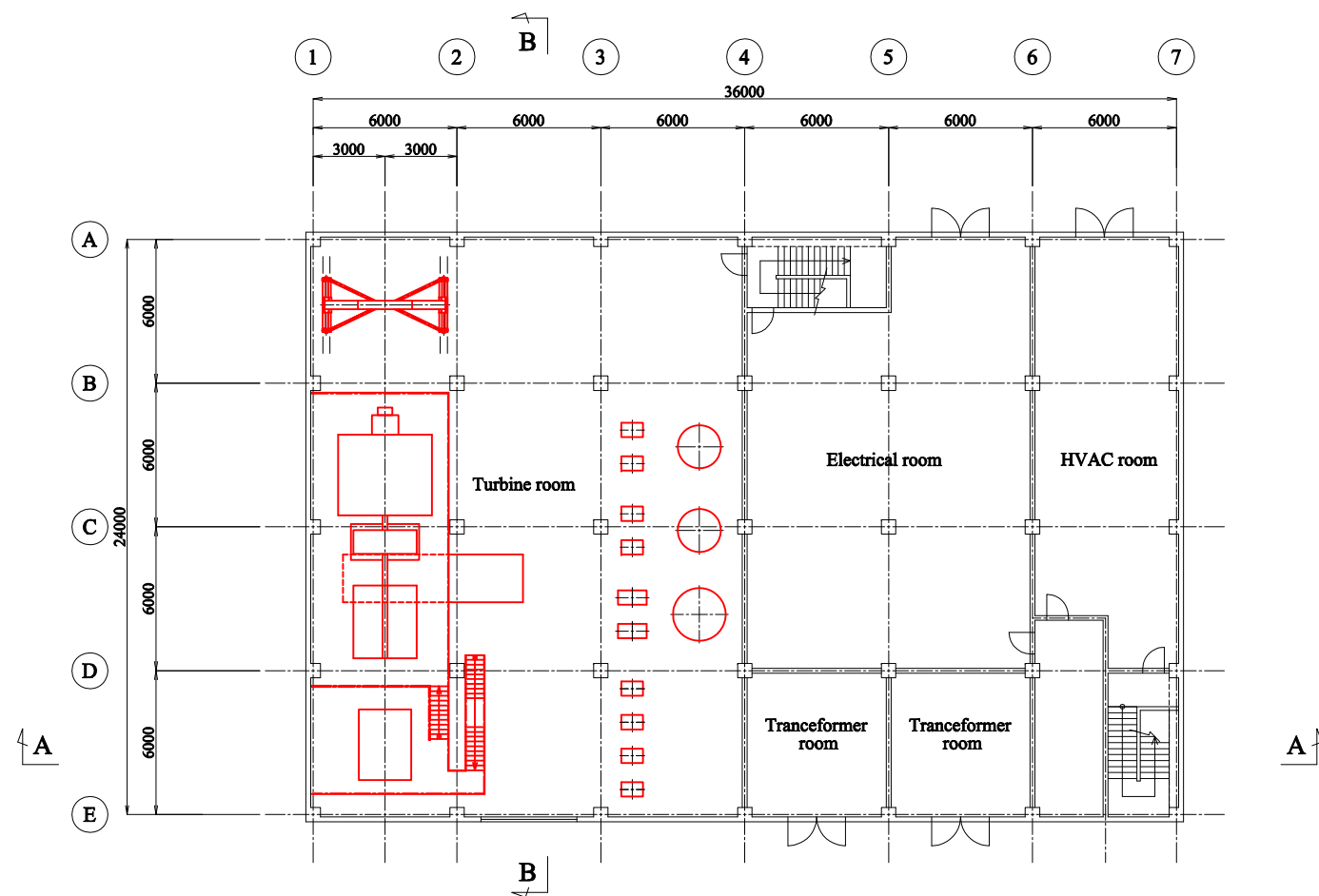
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-49
Title: Sludge Incineration Facilities	Scale: 1:300



2 FLOOR PLAN SC 1:300



3 FLOOR PLAN SC 1:300



1 FLOOR PLAN SC 1:300

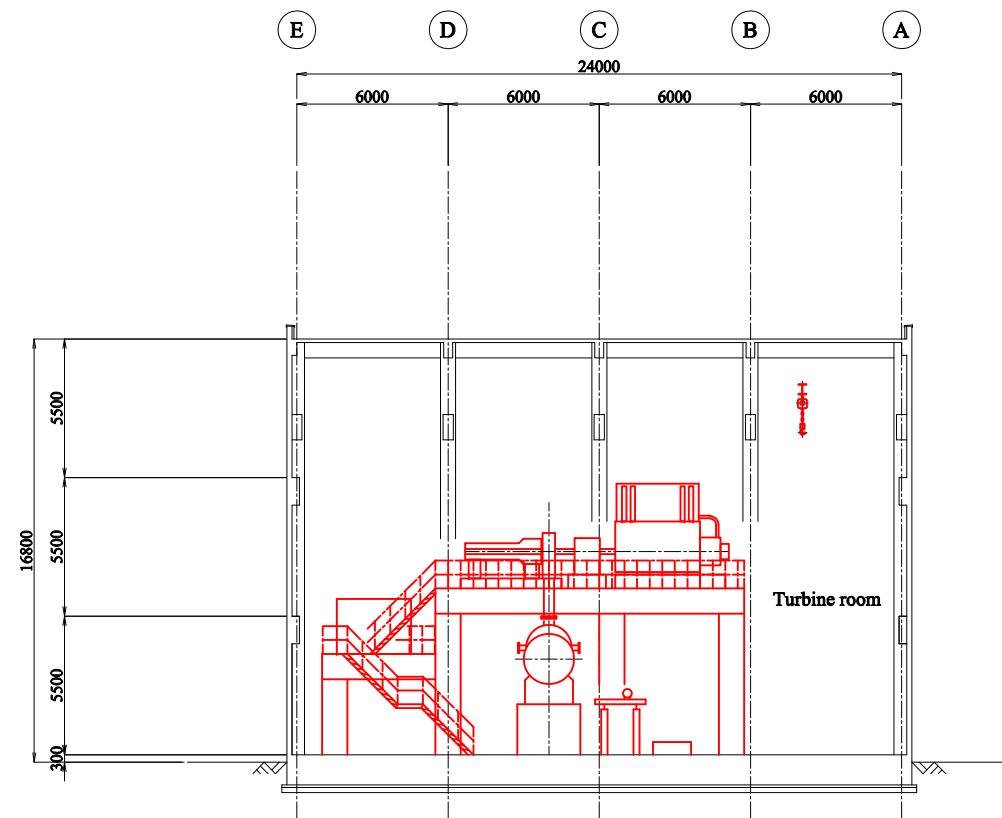
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

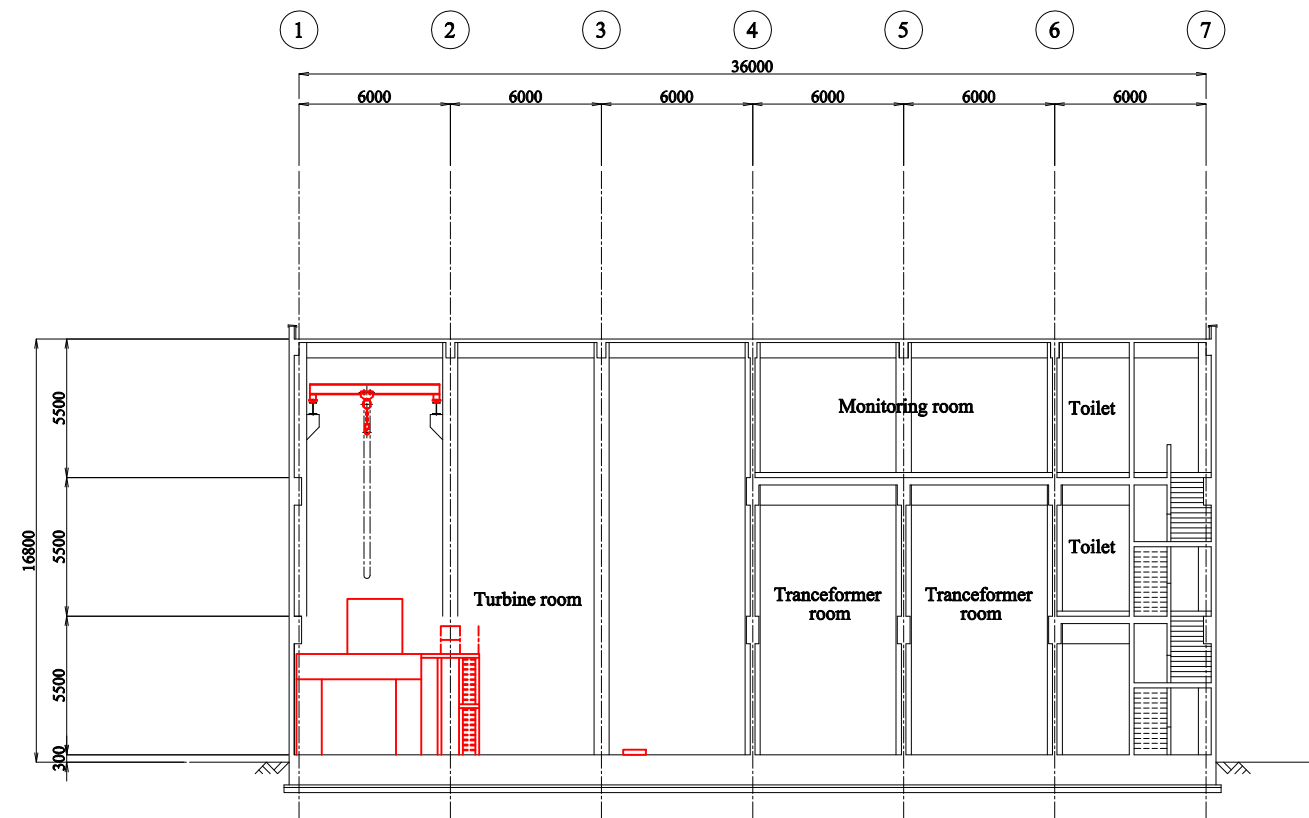
Drw no:
WWTP-50

Title: Steam Turbine Building

Scale:
1:300



A-A SECTION SC 1:300



B-B SECTION SC 1:300

EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

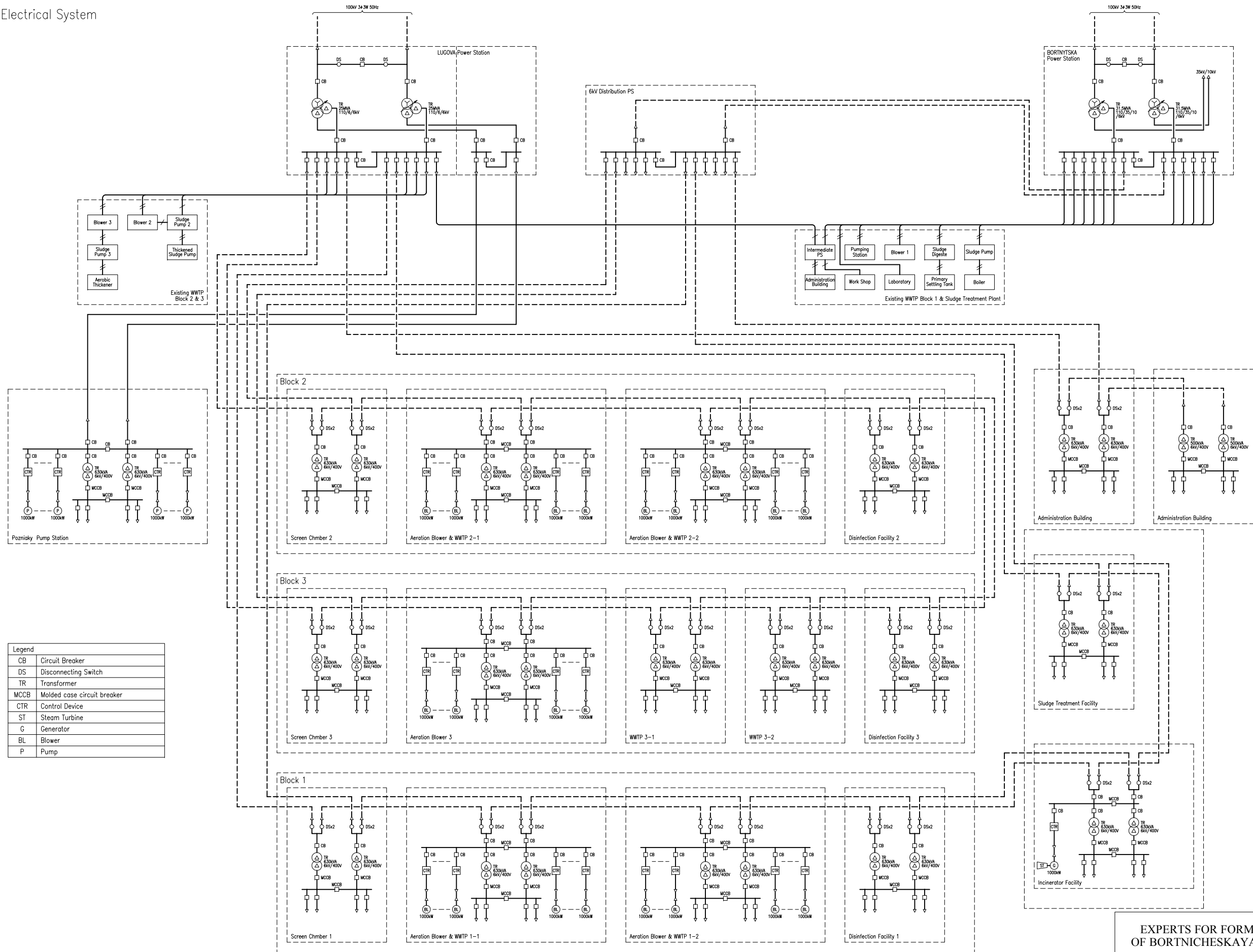
Components: Bortnychy Aeration Station

Drw no:
WWTP-51

Title: Steam Turbine Building

Scale:
1:300

Electrical System



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

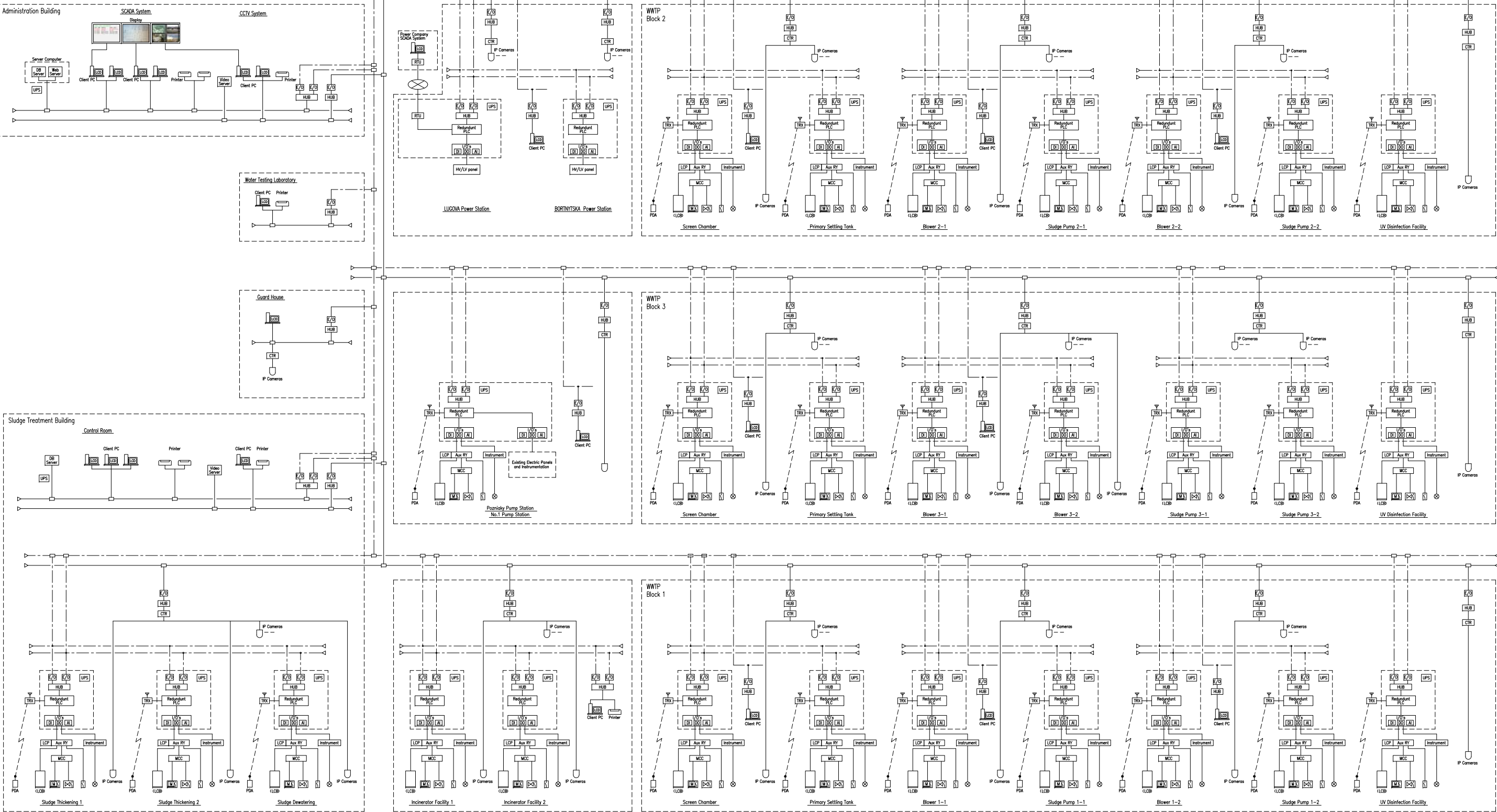
Components: Bortnychy Aeration Station

Title: Electrical System (Singl Line Diagram)

Drw no:
WWTP-52

Scale:
NONE

SCADA System configuration



Legend	
SCADA System	
DB	Data Base Server
Web	Web Server
HUB	Network Hub Unit
PLC	Programmable Logic Controller
I/O's	Input Output Units
AI	Analog Input Unit (DC4-20mA, 1-5V, etc.)
DI	Digital input Unit (On/Off, etc.)
AO	Analog Output Unit
DO	Digital Output Unit
RTU	Remote Terminal Unit
E/O	Electrical-to-Optical Converter
TRX	Transceiver for Wireless Communication
CTR	Control Unit for IP Camera

Legend	
Control System	
HV/LV	High Voltage/Low Voltage Switch gear
MCC	Motor Control Center
Aux RY	Auxiliary Relay Cubicle
Instrument	Instrument Panel
LCP	Local Control Panel
LCB	Local Control Box
PDA	Personal Digital Assistant

SCADA System

Purpose of SCADA

- Efficient operation.
- Modernization of operation.
- Automatic control.
- Sharing of information.
- Energy saving.
- Good Use of Man power.
- Active Implementation of IT.

Advanced Control System

- Online Self-tuning PID control
- Feedforward Control
- Database Mining
- Forecasting Future Trend
- Knowledge Base DB Serching

CCTV System

The purpose of the video monitoring system is for WWTP's security system and visual monitoring for operation and control. "Virtual site tour" function will be completed. Each network camera has the control function of pan/zoom/focus/lighting and selecting the recording mode. The following view points are suitable for each purpose.

- Influent well / Effluent river
- Screen Facility
- Sludge dewatering machine / Incinerator Facility
- Main entrance, gateway and road

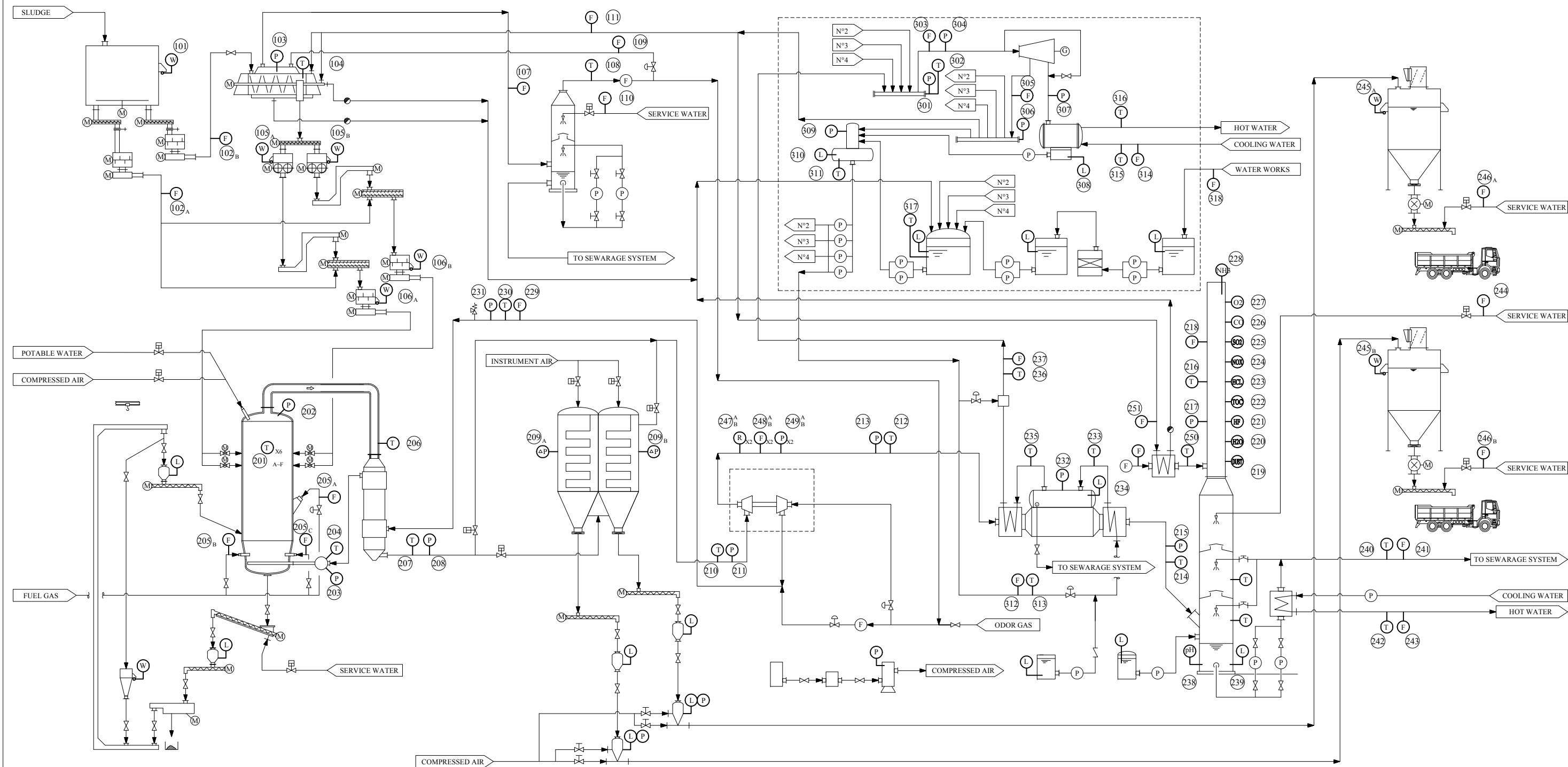
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNYCHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE

Components: Bortnychy Aeration Station

Title: SCADA System Configuration

Drw no:
WWTP-53

Scale:
NONE

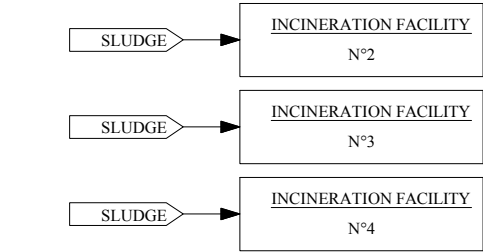


No.	Item	Type of Senser	nos
101	Sludge weight	Load cell	1
102	Sludge feed rate	Electro magnetic flow meter	2
103	Dryer inner pressure	DP cell	1
104	Dryer temperature	Thermo Resistance	1
105	Dried sludge weight	Load cell	2
106	Mixed sludge weight	Load cell	2
107	Carrier air flow rate	Orifice + DP cell	1
108	Dryer scrubber outlet temperature	Thermo Resistance	1
109	Carrier air return flow rate	Orifice + DP cell	1
110	Dryer scrubber make up water flow rate	Electro magnetic flow meter	1
111	Dryer steam flow rate	Orifice + DP cell	1

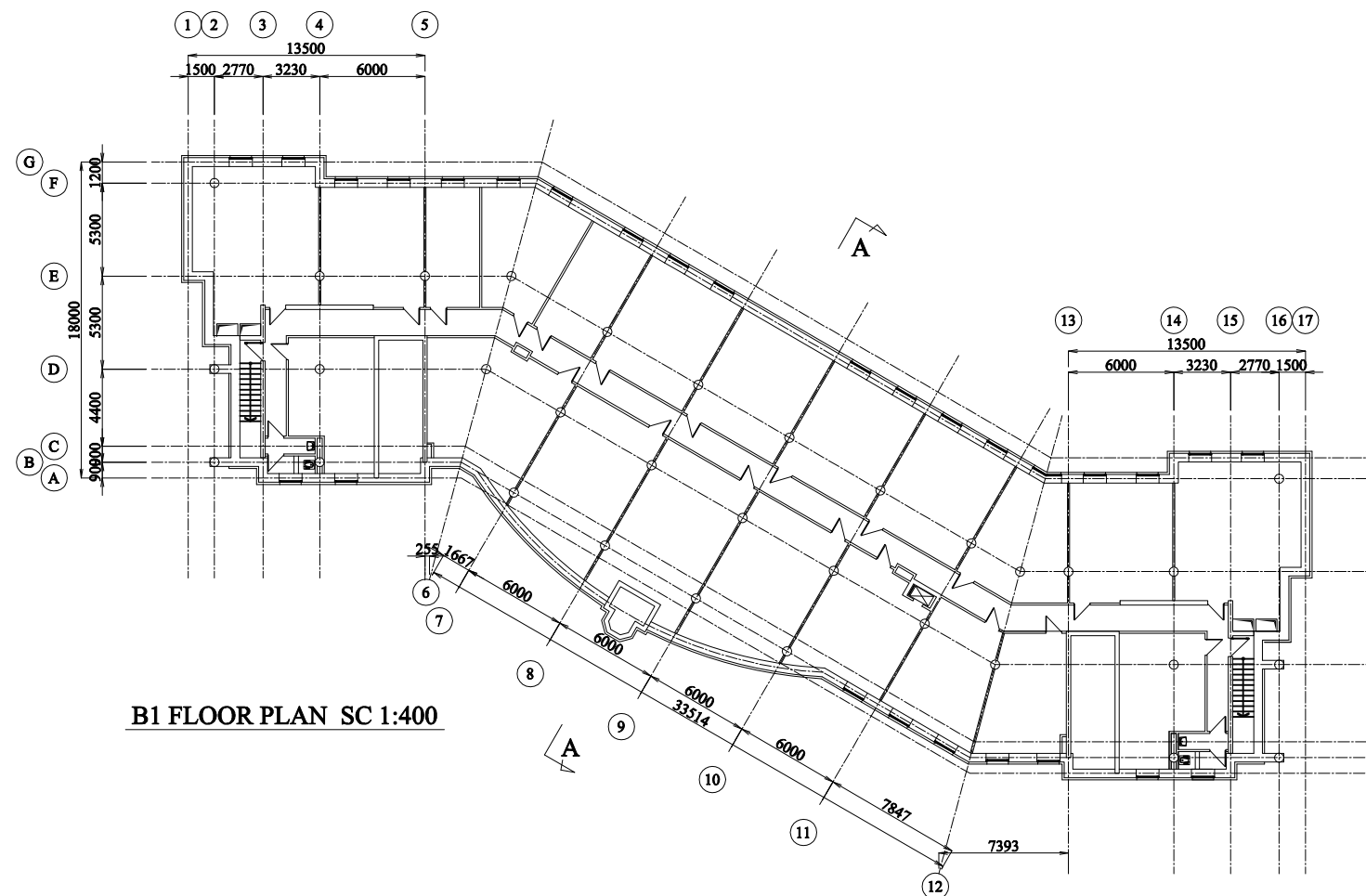
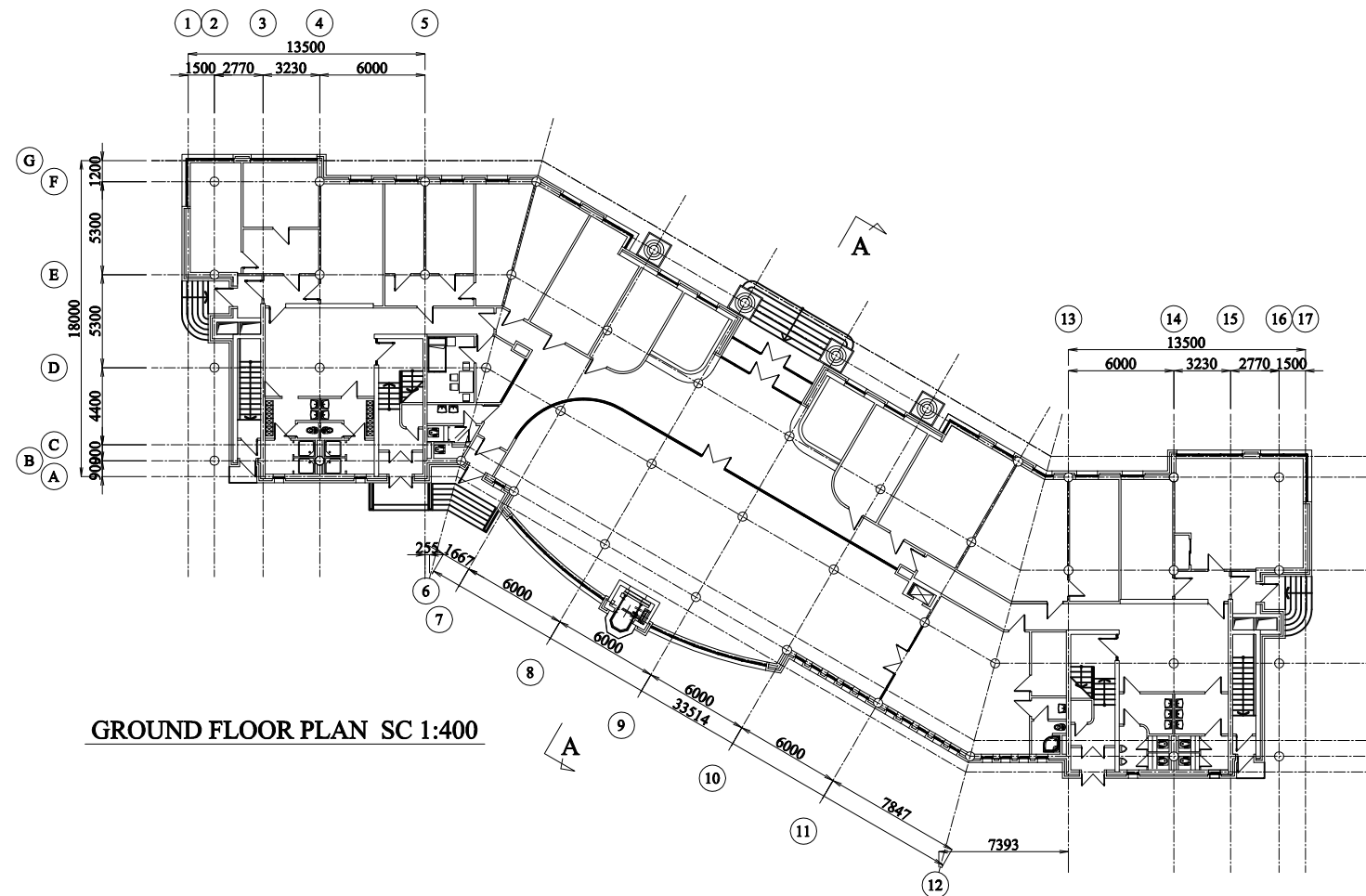
No.	Item	Type of Senser	nos
210	Bag filter outlet flue gas temperature	Thermo couple	1
211	Bag filter outlet flue gas pressure	DP cell	1
212	Turbo charger outlet flue gas temperature	Thermo couple	1
213	Turbo charger outlet flue gas pressure	DP cell	1
214	Boiler outlet flue gas temperature	Thermo couple	1
215	Boiler outlet flue gas pressure	DP cell	1
216	Stack flue gas temperature	Thermo couple	1
217	Stack flue gas pressure	DP cell	1
218	Stack flue gas flow rate	Pitot tube + DP cell	1
219	Stack dust	Gas analyser	1
220	Stack H ₂ O	Gas analyser	1
221	Stack HF	Gas analyser	1
222	Stack TOC	Gas analyser	1
223	Stack HCl	Gas analyser	1
224	Stack NO _x	Gas analyser	1
225	Stack SO ₂	Gas analyser	1
226	Stack CO	Gas analyser	1
227	Stack O ₂	Gas analyser	1
228	Stack Anmonia	Gas analyser	1
229	Combustion air flow rate	Orifice + DP cell	1
230	Combustion air temperature	Thermo Resistance	1

No.	Item	Type of Senser	nos
231	Combustion air pressure	DP cell	1
232	Boiler steam pressure	DP cell	1
233	Boiler drum feed water temperature	Heat resistance	1
234	Boiler drum water level	DP cell	1
235	Boiler steam temperature	Thermo couple	1
236	Super heated steam temperature	Thermo couple	1
237	Super heated steam flow rate	Orifice + DP cell	1
238	Desulfurizer pH	Glass electro tube	1
239	Desulfurizer water level	DP cell	1
240	Desulfurizer discharge water temperature	Thrm resistance	1
241	Desulfurizer discharge water flow rate	Electro magnetic flow meter	1
242	Utility hot water temperature	Thermo resistance	1
243	Utility hot water flow rate	Electro magnetic flow meter	1
244	Desulfurizer make up water flow rate	Electro magnetic flow meter	1
245	Ash weight	Load cell	2
246	Ash humidifier feed water flow rate	Electro magnetic flow meter	2
247	Turbine speed	Taco meter	2
248	Lube oil flow rate	Gear flow meter	2
249	Lube pressure	DP cell	2
250	White smoke prevention air temperature	Thrm resistance	1
251	Heat exchanger steam flow rate	Orifice + DP cell	1

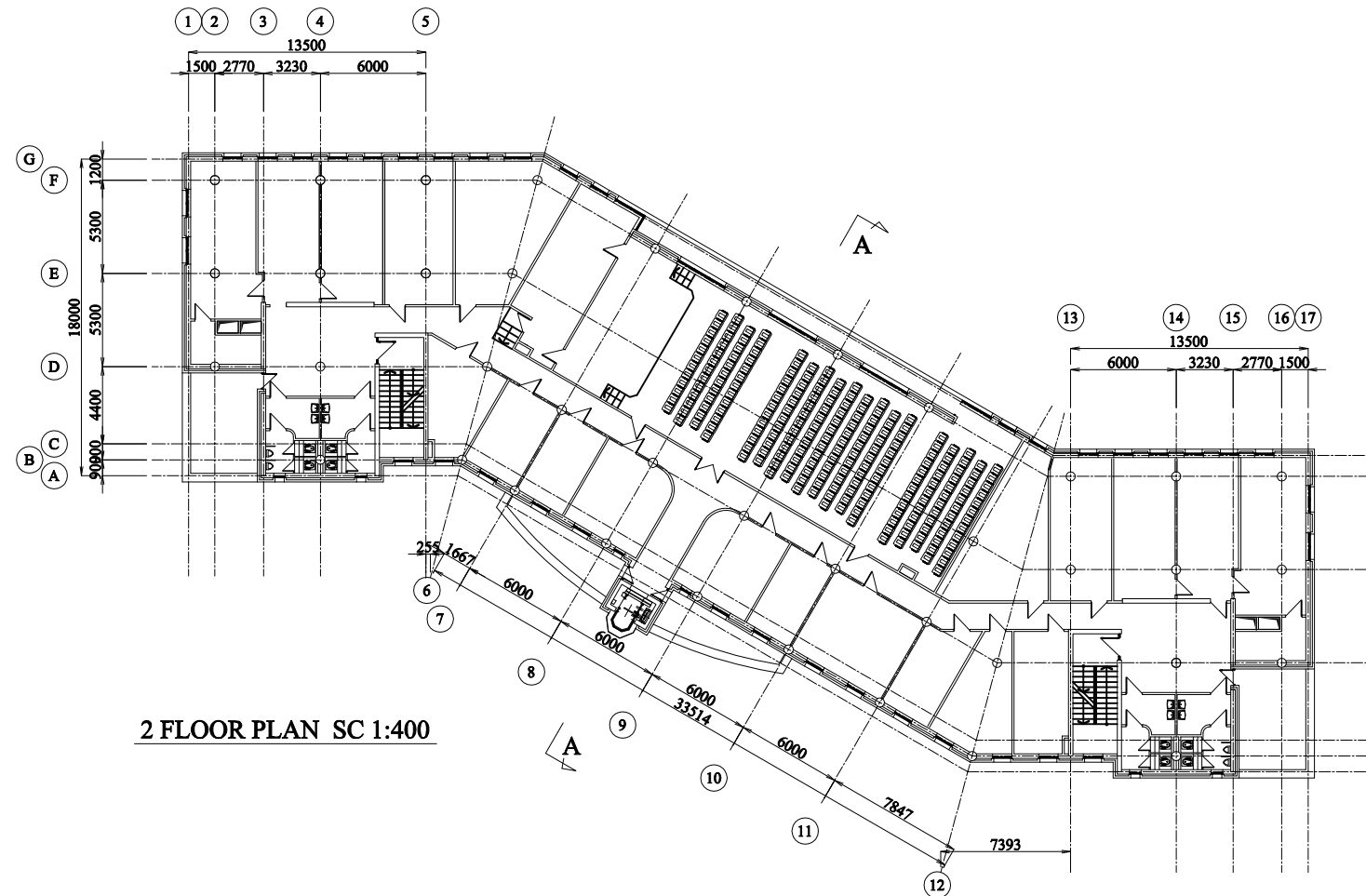
Common Facility			
No.	Item	Type of Senser	nos
301	High pressure header pressure	DP cell	1
302	High pressure header temperature	Thermo couple	1
303	Main steam flow rate	Orifice + DP cell	1
304	Main steam pressure	DP cell	1
305	Extraction steam flow rate	Orifice + DP cell	1
306	Low pressure header pressure	DP cell	1
307	Turbine exhaust pressure	DP cell	1
308	Condenser water level	DP cell	1
309	Deaerator pressure	DP cell	1
310	Deaerator water level	DP cell	1
311	Deaerator temperature	Thermo resistance	1
312	Boiler feed water flow rate	Electro magnetic flow meter	1
313	Boiler feed water temperature	Thermo resistance	1
314	Condenser cooling water flow rate	Electro magnetic flow meter	1
315	Condenser cooling water temperature	Thermo resistance	1
316	Condenser cooling water return temperature	Thermo resistance	1
317	BFW tank temperature	Thermo resistance	1
318	Boiler water make up water flow rate	Electro magnetic flow meter	1



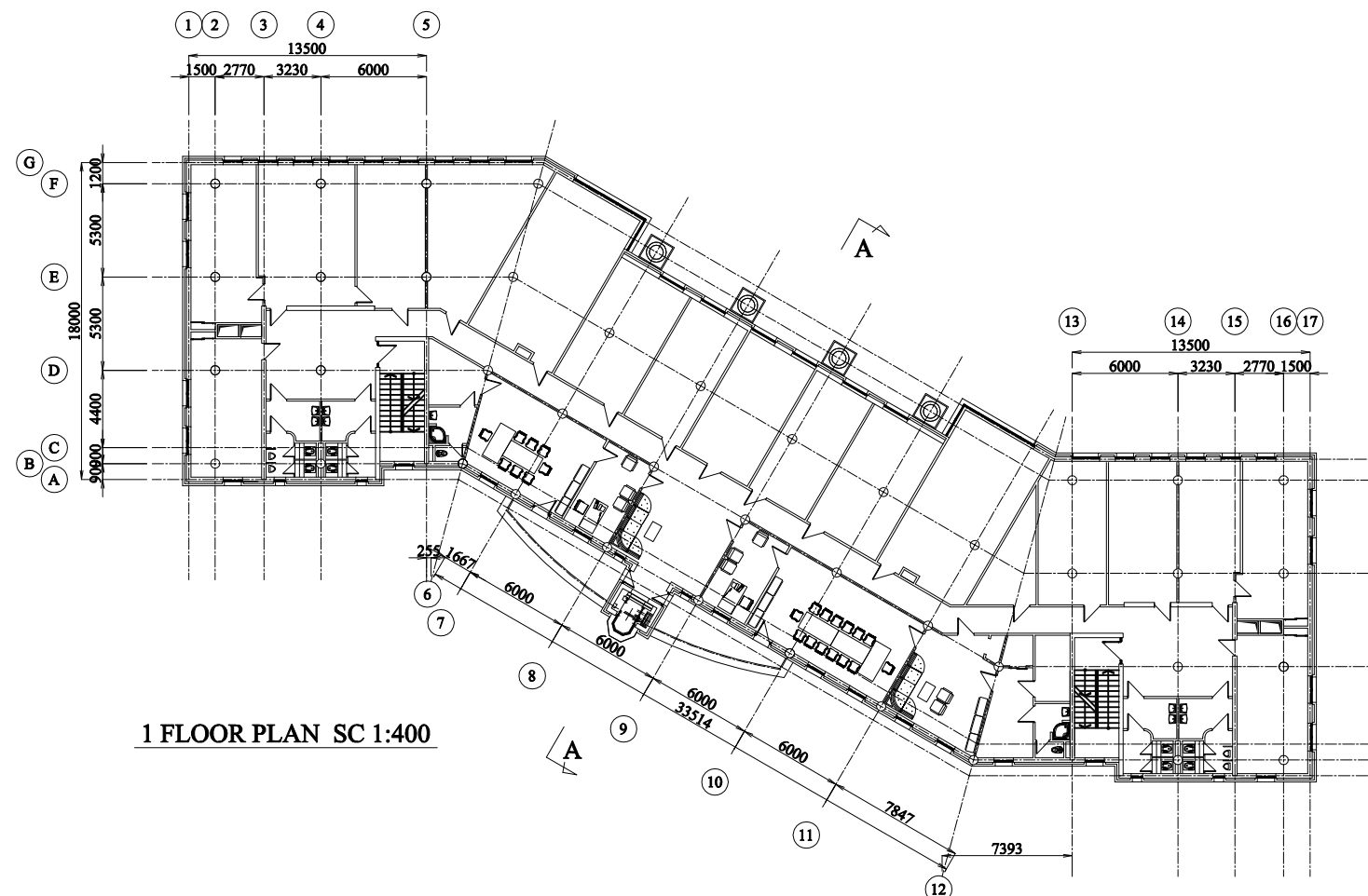
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-55
Title: Instrumentation List (Sludge Incineration Facilities)	Scale: NONE



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-56
Title: Administration Building	Scale: 1:400



2 FLOOR PLAN SC 1:400



1 FLOOR PLAN SC 1:400

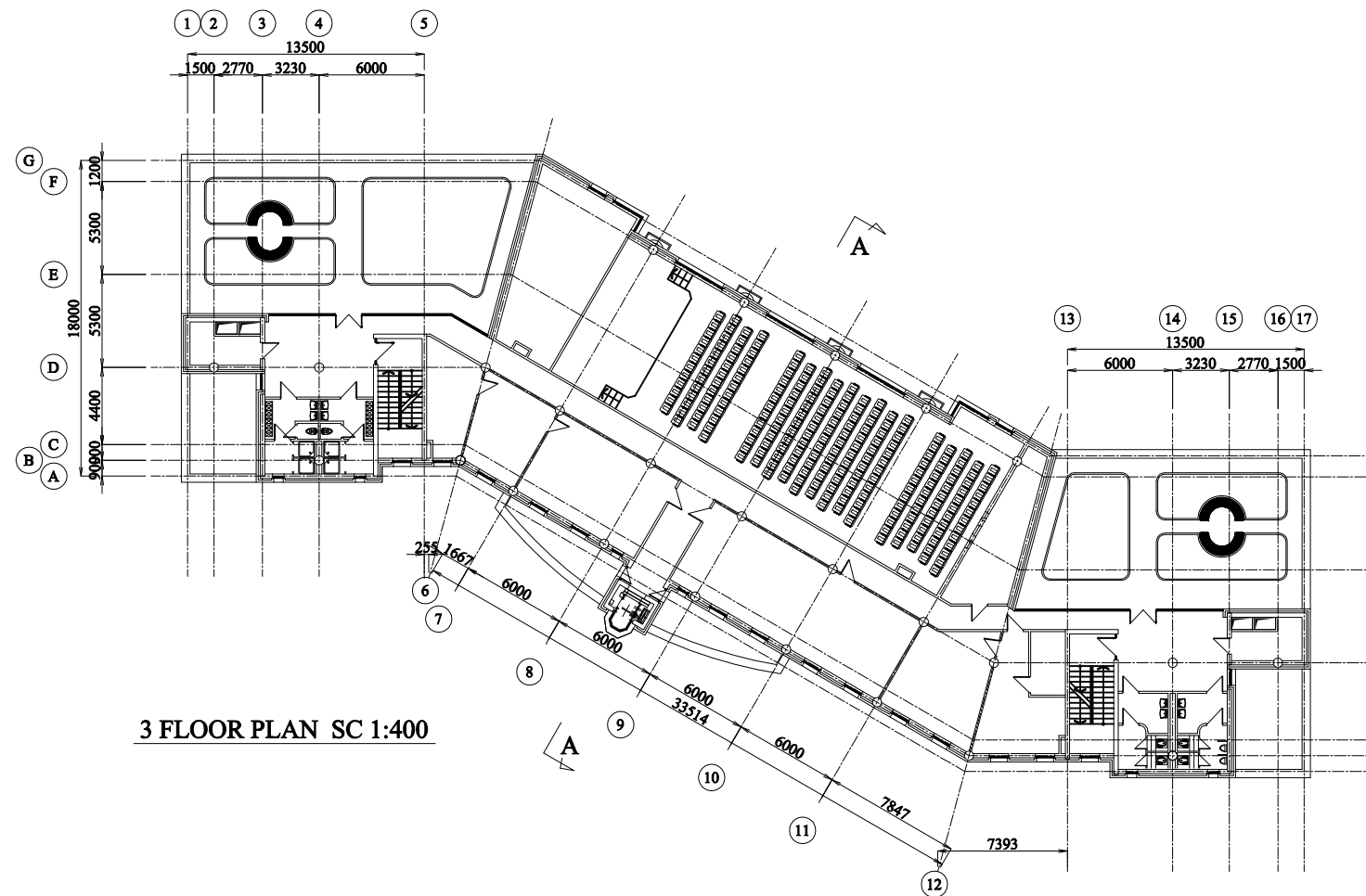
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

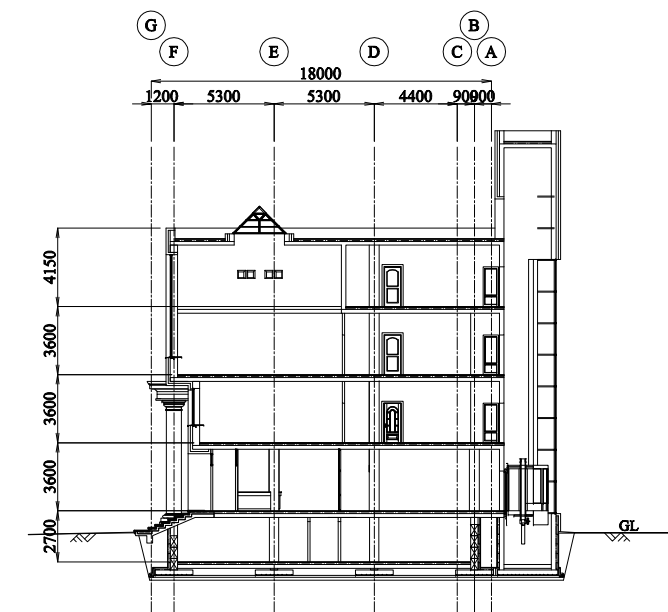
Drw no:
WWTP-57

Title: Administration Building

Scale:
1:400



3 FLOOR PLAN SC 1:400



A-A SECTION SC 1:400

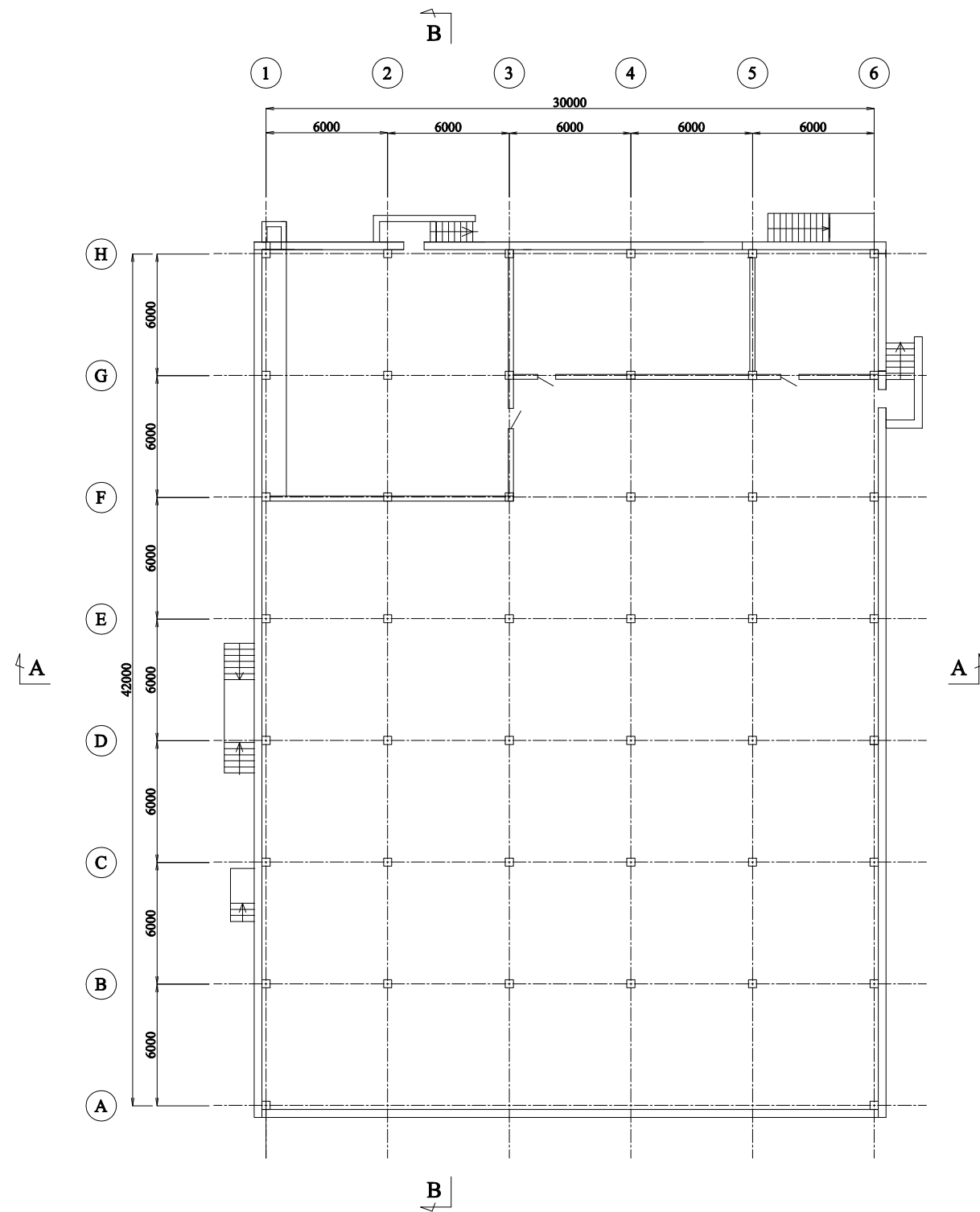
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

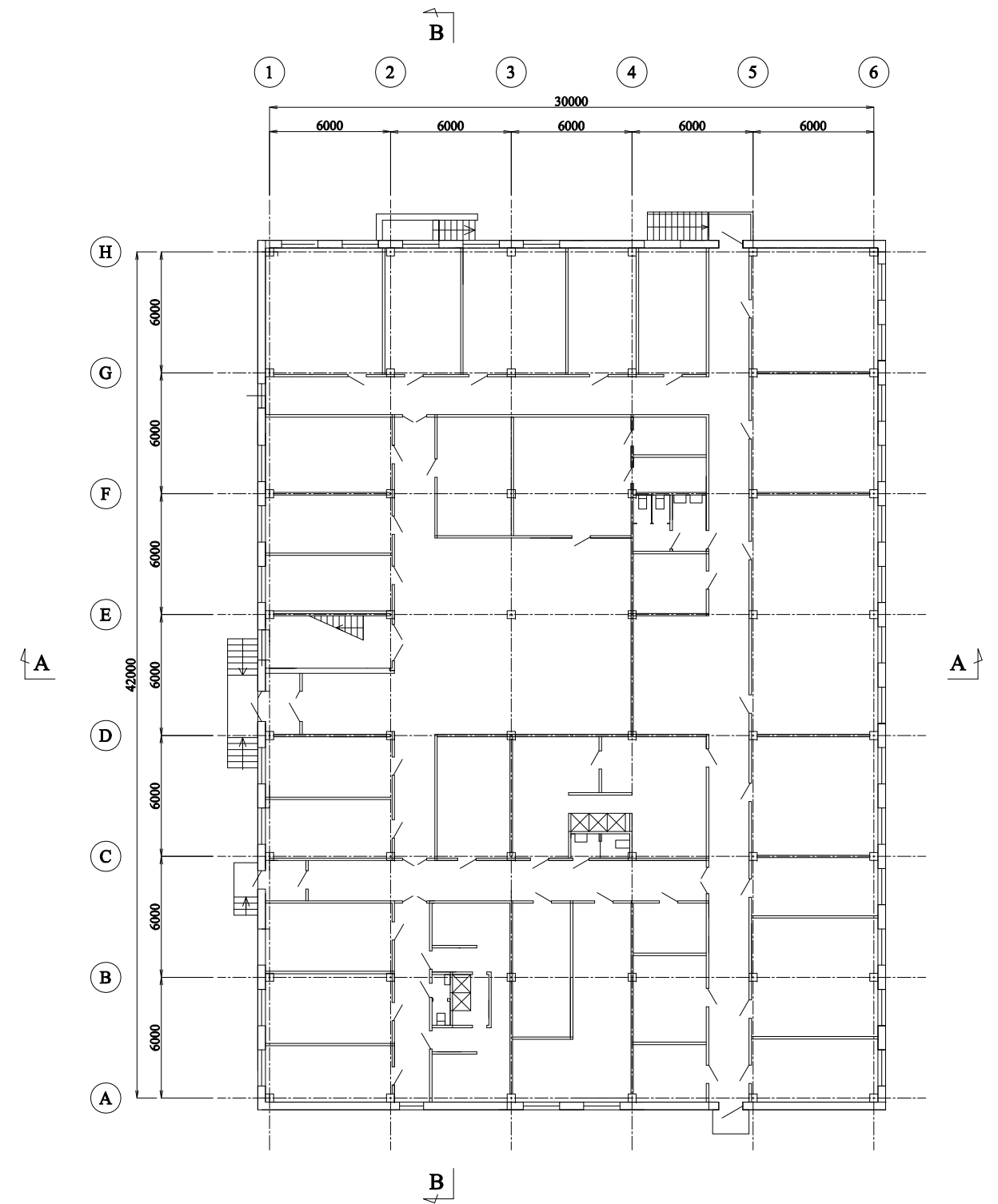
Drw no:
WWTP-58

Title: Administration Building

Scale:
1:400



B1 FLOOR PLAN SC 1:300



GROUND FLOOR PLAN SC 1:300

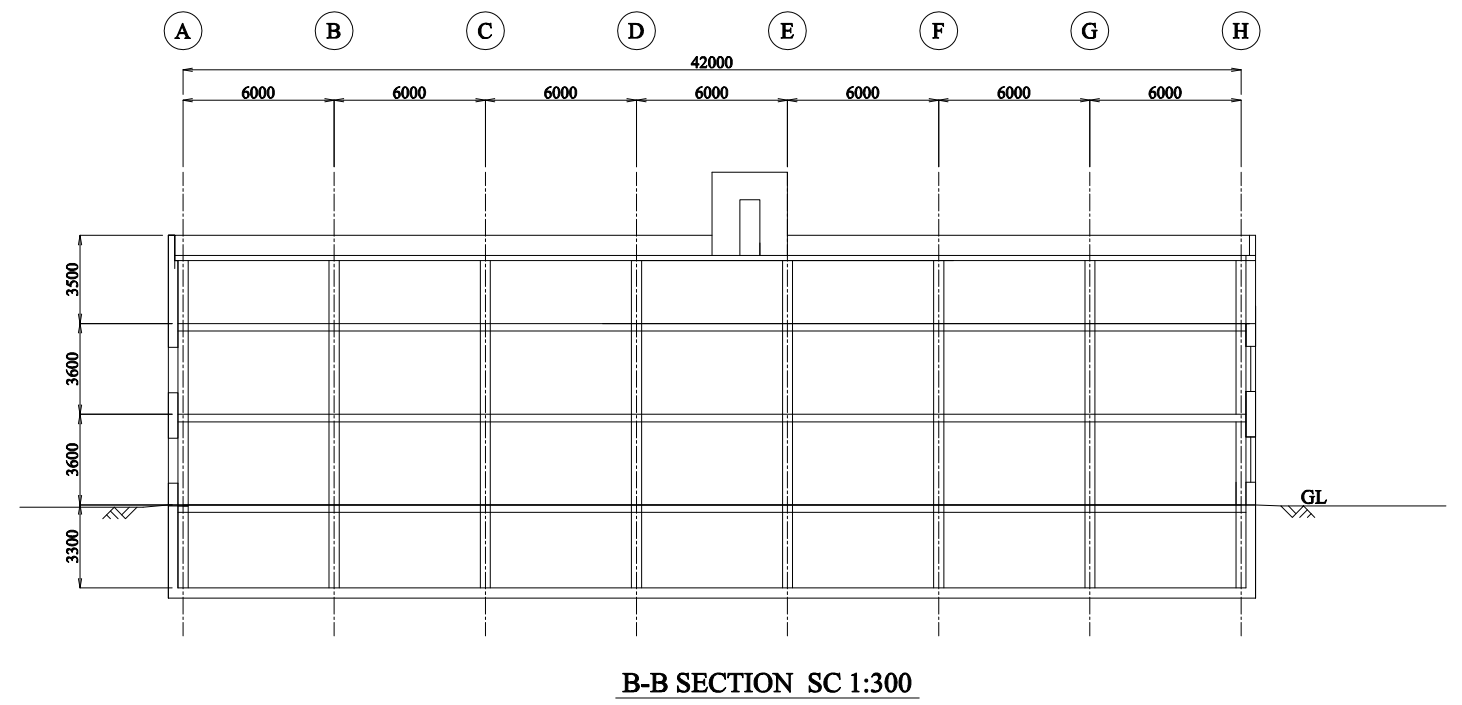
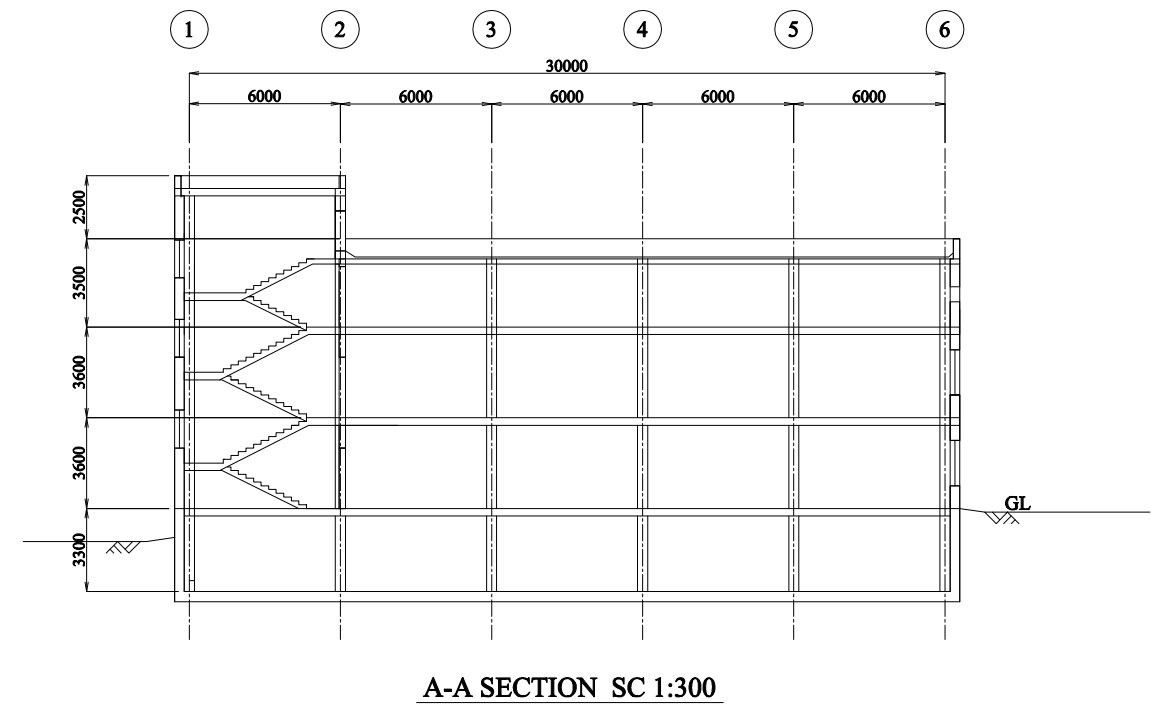
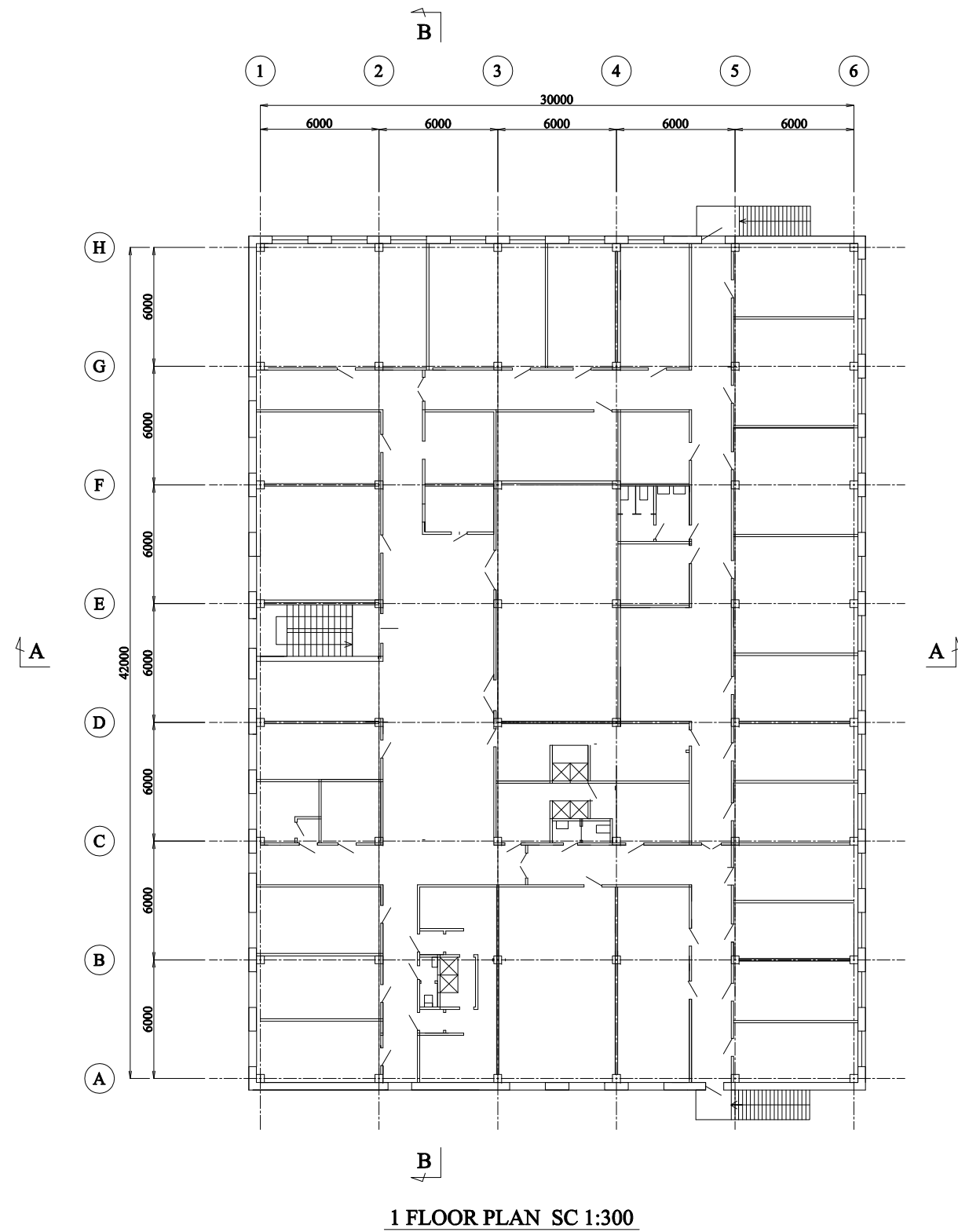
EXPERTS FOR FORMULATING RECONSTRUCTION PLAN
OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT
IN UKRAINE

Components: Bortnychy Aeration Station

Drw no:
WWTP-59

Title: Laboratory Building

Scale:
1:300



EXPERTS FOR FORMULATING RECONSTRUCTION PLAN OF BORTNICHESKAYA WASTEWATER TREATMENT PLANT IN UKRAINE	
Components: Bortnychy Aeration Station	Drw no: WWTP-60
Title: Laboratory Building	Scale: 1:300